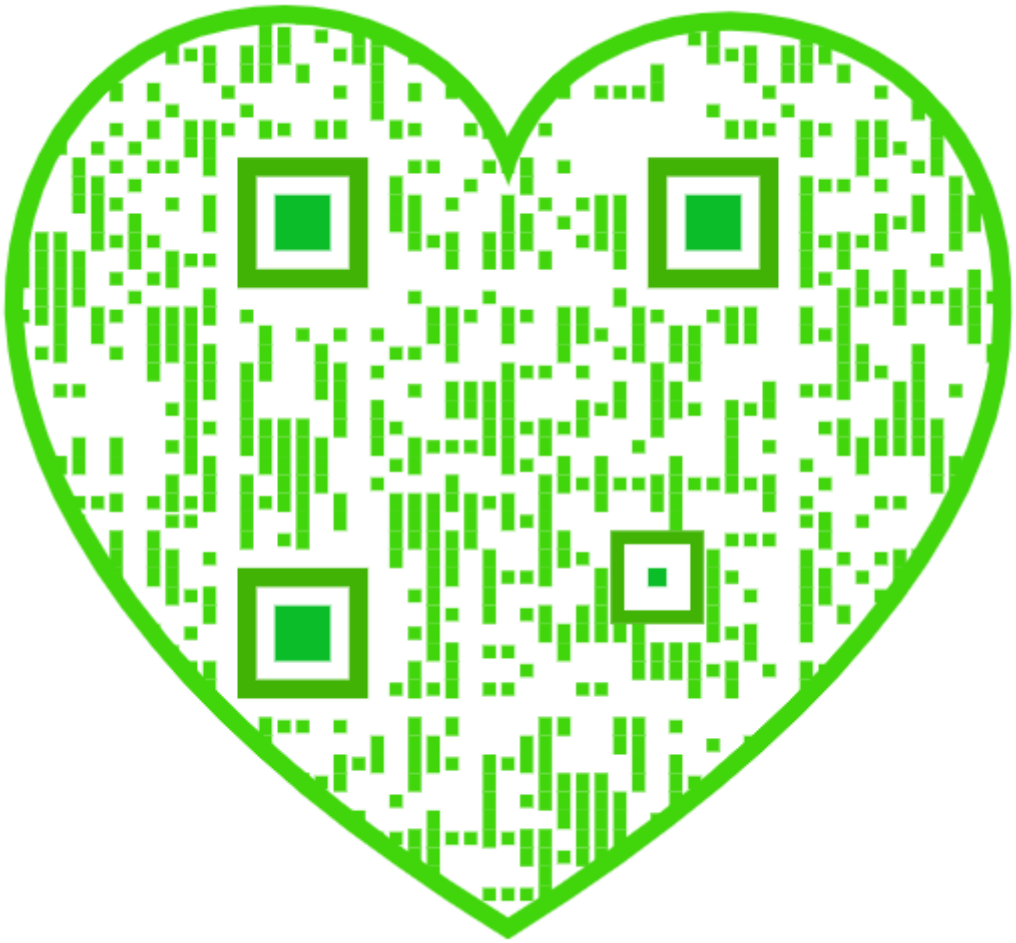

A REFERENCE HAND-BOOK

OF

OBSTETRIC NURSING

BY

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Member of the American Pediatric Society, etc.

ILLUSTRATED

SECOND EDITION, THOROUGHLY REVISED

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TO

THE PUPIL AND GRADUATE NURSES

OF THE

PHILADELPHIA LYING-IN CHARITY

PREFACE TO SECOND EDITION

IN preparing the second edition the appendix has been amplified, making it more available for reference. A new chapter on Precipitate Labor has been added. The text throughout has been revised and, where necessary, corrected.

Thanks are due Miss C. C. Tallman, Superintendent of the Philadelphia Lying-in Charity, for assistance in revising.

W. R. W.

PHILADELPHIA, PA., *August*, 1911.

PREFACE

In the specialization of the nurse's training, as in the medical profession, Obstetrics has become a distinct branch. To certain nurses this work is attractive, and they become proficient in it because of their liking for it; while for others who need preparation—not for the reason that they may have chosen it as a special field, but because the opportunity for practical nursing in obstetrics is not always offered in general training—a concise hand-book of the subject appears to be in demand.

It is assumed by the author that the foundation of the nurse's general knowledge has been laid at the hospital bed-side.

The author aims to present the details of his subject in simple form, so that they may be fixed permanently in the reader's mind. He recognizes that a text-book of this character should deal with the practical points which, when mastered, constitute the nurse's stock of knowledge, rather than with medical considerations.

Thanks are due Mrs. Mary E. Baker, former Superintendent of the Philadelphia Lying-in Charity, for suggestions in the presentation of the subject suitably for the undergraduate nurse; also Miss Helen M. Patterson for her advice in carrying out the practical arrangement of the subject.

W. R. W.

PHILADELPHIA, *October*, 1907.

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OBSTETRIC NURSING

CHAPTER I

THE BEGINNING OF PREGNANCY

IMPREGNATION occurs as the result of the union of the ovum and spermatozoön. The former is the microscopic cell body which, being discharged from the ovary, passes through the Fallopian tube and seeks lodgment in the uterus. In its passage it is sought out by the male element or spermatozoön.

In the unimpregnated state the ovum loses its vitality and is expelled from the uterus with the menstrual discharge. The lining membrane of the uterus, preceding the next recurring monthly flow, again becomes engorged with blood, and the freshly discharged ovum is cast off with the menstrual blood. The process is thus repeated. The periodic separation of the ovum from the ovary is called *ovulation*, while the return of the menstrual flow at each succeeding period is called *menstruation*—a term descriptive of the monthly recurrence of the flow.

Both ovulation and menstruation cease as soon as pregnancy takes place. The blood which ordinarily is discharged is retained and becomes the source of nourishment to the ovum.

In the early stage of pregnancy the local condition is not perceptible, as the slight enlargement of the uterus is not sufficient to displace the organ or to cause it to encroach upon its surroundings. In

general however, the absence of the monthly period and the instinctive impression which some

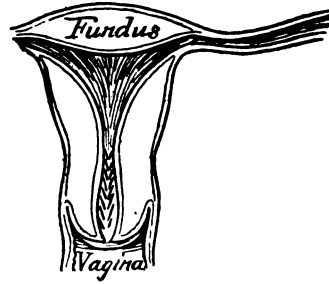

FIG. 1.—Transverse section of uterus and Fallopian tube, showing the course which the ovum follows in its passage.

women have that conception has occurred are likely to call attention to the possibility of pregnancy.

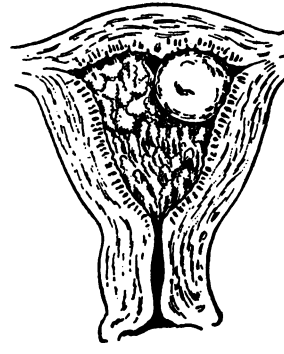

FIG. 2.—Showing attachment of ovum to uterine wall, also altered mucous membrane and enlarged blood-vessels.

While the signs of pregnancy in the early stage may not be evident, nevertheless the uterus is undergoing changes which adapt it to the growth of the

embryo or developing ovum. The cavity becomes enlarged and the lining or mucous membrane altered. The ovum, after passing through the Fallopian tube and entering the cavity of the uterus (Fig. 1), becomes attached to the wall of the latter at a point where the layers of the mucous membrane permit of its being embedded in them. At the same time the muscular tissue in the uterus becomes developed, causing a thickening of its wall and a general increase in volume (Fig. 2). The blood-vessels which carry the blood to and from the uterus undergo enlargement in order to supply the amount of blood necessary for the demands of the growing ovum.

These constitute the local changes which mark the beginning of pregnancy.

CHAPTER II

THE COURSE OF PREGNANCY

As gestation advances, the development taking place in the uterus impresses itself upon the general system. The first effect of this is manifested by certain changes in the nervous system; as for instance, emotional disturbances, perverted desire for food, and nausea and vomiting. These manifestations are due to nerve irritability, and are spoken of as reflex.

FIG. 3.—Showing the carriage of the pregnant woman in the seventh month (after Hirst).

Again, pregnancy affects the organs of excretion, the kidneys especially, and influences the output of substances which, when retained within the system, produce poisonous or toxic effects. This is spoken of as the toxic manifestation of pregnancy.

Later, the mere presence of the weighty uterus influences the gait of the woman and alters her carriage and figure (Fig. 3). This change constitutes the physical manifestation of pregnancy.

While these general changes are taking place the uterus rises toward the abdominal cavity and displaces the intestines.

This gives rise to the early abdominal enlargement, scarcely noticeable to the woman herself, except in the feeling of slight distention it produces.

There follows also an engorgement or fulness of the blood-vessels of the lower portion of the birth canal, which causes a purplish discoloration of the mucous membrane lining the vagina.

The center of active change, however, is in the uterus itself. Here the lining membrane, which is spoken of as the decidua, becomes thickened and forms a wall about the ovum, spreading not only around the latter, but completely covering it later on. That portion of the decidua lying between the ovum and the wall of the uterus, and serving as the point of attachment for the ovum, is called the decidua serotina; that surrounding the ovum, the decidua reflexa; and that lining the remainder of the uterine cavity, the decidua vera.

Changes in the Ovum.—Within the wall of the ovum itself, which appears as a minute spheric mass, the so-called embryonic portion makes its appearance. This is at first a mere swelling. It soon begins, however, to undergo changes which result in the grouping of the cells of which it is composed into different layers. From these, as development proceeds, the different structures of the body are formed: namely, the muscles, bones, brain, nerves, blood-vessels, and internal organs.

While this arrangement of cells is taking place a small double sac called the *amnion* arches over the back of the embryo and spreads out until it completely envelops it. The growing embryo by this time has pushed into the center of the original ovum and has severed its connection with the wall of the latter, except where it remains attached by what is later to become the umbilical cord or navel-string. Finally, the amnionic sac enfolds the cord also. It is as if the fetus—which is the proper term, instead of embryo, as soon as the umbilical cord has made its appearance—had been held by its cord and dropped into a double sac, pressing in one layer against the other

until the edges of the cup-like depression which it makes are closed together about it (Fig. 4). The interior of this sac becomes filled with fluid. The sac, as mentioned above, is called the amnion, the fluid within it, the amniotic fluid.

The fetus is now attached by the umbilical cord to the placenta or after-birth, which has become developed from a layer of cells of the ovum, called the chorion. At the point of attachment between the ovum and uterus, in the early stage of the formation of the placenta, the chorion throws out

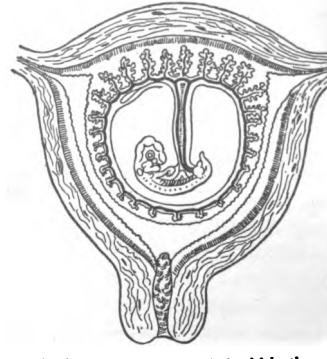

FIG. 4.—Developing embryo suspended within the amniotic sac.

minute finger-like projections, which penetrate into the decidua. These projections grow and become united in a disk-like mass, which is the placenta.

By the time the placenta is formed pregnancy has advanced to the end of the third month or twelfth week. Before this, if the ovum should be expelled it would look like a small sac containing fluid, and surrounded by the delicate projections of the chorion. The latter give to it a shaggy appearance. The embryo is to be found within the sac, attached to the wall of the latter. At this

early period its form would be scarcely perceptible. At the end of the second month it would appear as a gelatinous oblong mass, bent upon itself, with an enlargement at the head end marked by transverse grooves and furnished with the eyes.

Development of the Fetus.—Should the fetus be expelled after the placenta has been formed, it would be seen suspended by the umbilical cord within the amniotic sac. At one point in the sac wall the placenta would be seen with the umbilical cord attached to its central portion. The shaggy chorion will have disappeared by this time.

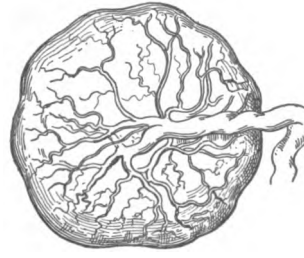

FIG. 5.—Fetal surface of placenta, showing the convergence of the placental blood-vessels into the umbilical cord.

After the third month the sex may be made out and the fingers and toes are formed. The growth of the bones gives the fetus shape and distinguishes it from the gelatinous form of the early embryo. It is now from 3 to 4 inches in length.

From this time on the fetus grows to resemble the full-term infant, passing through, first, a stage in which a downy covering called lanugo envelops its body, and then a stage in which it takes on the enveloping layer of fat which characterizes a healthy newborn infant.

Up until the fifth month the head is developed at the expense of the rest of the body, but in the latter weeks of pregnancy the development of the

head and body progresses more evenly, so that the head no longer overbalances the rest of the body in size.

We must bear in mind that the most important demand of the fetus is nutrition. The only source of nutrition is from the mother's blood. The placenta is the means by which this nutrition is supplied. The circulation of the fetus and that of the mother come in contact with each other in the placenta, not by commingling of the blood, but by the fetal blood being conveyed to the delicate branched processes in the uterine or maternal surface of the placenta. These are called villi.

FIG. 6.—Diagrammatic sketch of cross-section of placenta, showing the villi floating in the blood of the placental sinuses.

They float in the maternal blood current, which permeates the spaces or sinuses of the placenta. They extract from the blood the nourishment for the fetus. The umbilical cord conveys the freshened blood from the placenta to the fetus and returns the venous blood. Thus a chemic interchange between the blood of the fetus and that of the mother is constantly going on in the placenta.

It is, therefore, to be understood that the freshened blood enters the fetus's circulation through the umbilical vein instead of from the lungs, as is the case after the child begins to breathe at birth. This means a decided difference in the course of the circulation. Instead of the blood which enters

the right side of the heart being conveyed to the lungs, it goes directly from the right to the left side through an opening called the foramen ovale, between the auricles or fore-chambers of the heart. After supplying the various parts of the body it is directed to the artery that enters the umbilical cord and is conveyed back to the placenta. The current of blood thus passes by the lungs, but takes in the placenta instead.

Enlargement of the Uterus.—This process of

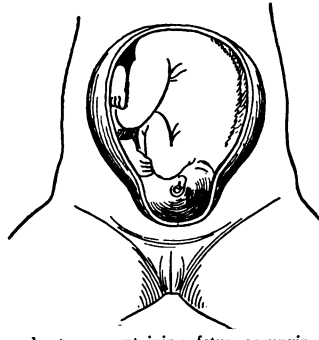

FIG. 7.—Enlarged uterus containing fetus occupying the abdominal cavity.

nutrition adds to the growth of the fetus. The uterus, therefore, enlarges to accommodate the latter. The enlarging uterus may be felt at the end of the third month as a rounded mass in the lower region of the abdomen, behind the bladder. By the end of the fourth month the swelling is large enough to be seen, and at the end of the sixth month the upper portion or fundus of the uterus is more than a hand's-breadth above the umbilicus or navel. By the beginning of the ninth month the fundus presses against the ribs, the enlargement having reached its greatest height.

After this there is a subsidence and the abdomi-

nal wall seems to protrude. There is considera
greater protrusion in a woman carrying her seco
of third child than in a primigravida (a wom
who is carrying her first child). This is due
relaxation of the abdominal wall. The presen
of the gravid uterus during an earlier pregnan
has stretched the structures of the abdominal w
and separated, to a certain degree, its muscl
that is, more properly speaking, the recti muscl
Thus, women in their later pregnancies (mult
arous women) present a lax or pendulous abd
men. Thus, also, the subsidence of the fundu
which is spoken of as lightening, is not so like
to occur in multiparous women, as not only is t
presenting part of the fetus more readily accomm
dated in the pelvis, but the fundus sinks progre
sively from the seventh month on. Lightenin
therefore, is not an absolutely reliable sign
estimating the period to which pregnancy h
advanced.

CHAPTER III

THE SIGNS OF PREGNANCY

THE diagnosis, or the establishing of the fact that pregnancy exists, belongs to the physician; to the nurse falls the duty of interpreting the importance of certain signs arising from pregnancy. She may have no other responsibility than to make herself familiar with them, as standards by which abnormal conditions may be judged. At the same time she should be able to understand them. The signs of pregnancy are those evidences which are apparent not only to the woman herself, but to the observer also. The symptoms of pregnancy are those indications which the woman herself is conscious of. We may consider all the evidences of pregnancy, including the symptoms, under three headings:

1. Doubtful signs.
2. Probable signs.
3. Positive signs.

Doubtful Signs.—The doubtful signs are those evidences which may occur not only in pregnancy, but in other conditions as well. The most important of these, because it is the first that makes itself known to the patient herself, is the *stopping of her monthly period.* In a healthy woman with whom menstruation has been regular this is important. There are two things to be noted, however; first, that menstruation may be either deferred or its absence may be due to some condition which has not shown itself in any other way; second, a discharge similar to menstruation may occur during pregnancy.

Together with this sign, because it occurs next in sequence, we may mention the symptom of *nausea*. This occurs after the end of the first month and continues for 6 or 8 weeks. It is sometimes a recurring symptom, appearing periodically or toward the end of pregnancy, and is called, from the time of its daily appearance, morning sickness. It is usually accompanied by vomiting. It is grouped with the doubtful signs of pregnancy, as it may be due to other causes. Pregnancy may even exist without its being present at all.

The sign of next importance is *abdominal enlargement*. From the end of the third month this may be detected. The mistaking the uterine enlargement for any other condition may be prevented by remembering that the uterus occupies a position in the middle line of the body and that it is symmetric in shape. Although the enlargement of the uterus is only a doubtful sign, when considered together, however, with morning sickness and the cessation of the monthly period it indicates pregnancy. An irritable condition of the bladder which causes the patient to void urine frequently is sometimes included among the doubtful signs of pregnancy.

Among the doubtful signs is the *craving for unnatural articles of food*. Mental depression and emotional disturbances may also point indefinitely to beginning pregnancy.

Probable Signs.—Among the important probable signs are the *changes which occur in the breasts*. Before the end of the second month the woman is aware of a sense of fulness, such as precedes menstruation in some women. In fact the similarity to the latter sensation makes this an uncertain sign. Slight enlargement is also noticed. Later the changes consist, first, in a distinct enlargement with an underlying nodular hardness;

second, in the deepening in color of the area about the nipple. This is not conspicuous in blond women, while in brunettes it forms a wide circle, deeply pigmented. At the outer edge of this circle may be seen a mottled area where the pigmentation or deepening color blends with the color of the surrounding skin, so that little islets of unpigmented skin appear evenly distributed in the discolored area. They are called the glands of Montgomery. The pigmentation about the nipple is called the areola. The outer, partially pigmented area, including the glands of Montgomery, is called the secondary areola.

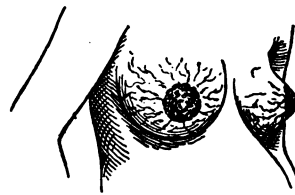

FIG. 8.—Changes in the breasts significant of pregnancy (after Hirst).

The nipple may remain unaffected by pregnancy, although where it is at all prominent it may increase somewhat in size. A slight, yellowish discharge exudes from the nipple, called *colostrum*. It is apt to dry in a delicate crust if not removed.

In women who have recently nursed an infant the appearance of a discharge from the nipples may serve as an indefinite sign of pregnancy. The remnant of milk in the breast will exude and will resemble colostrum. It is important, however, to note that the colostrum is much thinner than the milk which is left in the breast, and much more apt to dry into a crust. In women of fair skin the network of superficial veins may be more or less plainly seen in irregular blue lines which traverse the breast.

A similar discoloration occurs in the *mid-line of the abdominal wall.* This begins in the lower portion and extends upward to a point corresponding to the height of the fundus. In women of dark complexion the whole of the abdominal wall, including especially the area about the navel, is apt to become pigmented.

In the skin of the breasts and abdomen, sometimes over the front of the hips, there appear

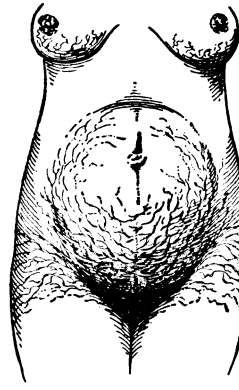

FIG. 9.—Distribution of abdominal striæ.

bluish or pinkish glazed lines called *striæ* (Fig. 9). They are not altogether distinctive of pregnancy when they appear over the abdomen, but they rarely occur upon the breasts in other conditions. They are due to tearing apart of the deeper layer of the skin from stretching. They are in reality small scars. In women who have already gone through pregnancy they are glistening white in appearance. On the abdomen they are usually arranged vertically, with an outward curve, corresponding to the shape of the uterine enlargement. They are classed among the probable signs because

they may occur in other conditions, while, on the other hand, they may be absent in some women during pregnancy.

Although the early abdominal swelling is doubtful, yet the steadily increasing enlargement is a more positive evidence of pregnancy, and should be classed among the probable signs.

There are other *probable signs* which may be merely mentioned here, as they have to do with the question of diagnosis alone. They are in part revealed by internal examination. They are the changes in the cervix or neck of the womb, the consistency and shape of the uterus, the violet discoloration of the mucous membrane of the vagina, and, finally, the sense of fluctuation experienced by suddenly displacing the fetus in tapping the uterus, called ballottement. After the middle of pregnancy two signs which are also medical, inasmuch as they require trained observation for their detection, occur. They are the *uterine souffle* or blowing sound heard over the uterine artery, corresponding to the mother's pulse beat, and the *rhythmic contraction of the womb.* The latter is spoken of as the *Braxton Hicks sign.* The Braxton Hicks sign occurs at more or less lengthy periods, the contraction lasting for a few seconds to a half minute. The contractions are painless at first, but as pregnancy advances they become noticeable on account of the bearing-down sensation which they produce. It is this latter tendency that makes the uterine contractions important for the nurse to observe, as the increase in pain denotes irritability of the uterus, usually the result of fatigue. Very often contraction pains are relieved by rest.

Positive Signs.—The first of these is comprised in what are called the *active movements of the fetus.* They are to be recognized after the fifth month. The fetus within the uterus moves

with its body, as a whole, by the sudden extension of the back, which is bent to accommodate its cramped position, and with its extremities. These movements constitute an unmistakable sign of pregnancy, although when they first occur the woman herself may mistake them for the displacement of gas in the intestines. This is especially the case in primiparous women who have not gone through the experience of pregnancy. After the sixth month the movements may be detected by sight and by placing the hand over the abdominal wall in palpation.

The first sensation of the fetal movement is called *quickening*. It occurs in primiparous women any time after the middle of pregnancy or the end of the twentieth week; in multiparous women from two to three weeks earlier than this. The first sensation recognizable is that of a slight fluttering. This is at first momentary and disappears, to return again more decidedly.

The second positive sign is to be found in the *fetal heart sounds*. It is most important for the nurse to be able to recognize these, as she might at any time be left in charge of the patient in labor, where the condition of the fetal heart would indicate the necessity of taking urgent action to save the child. Here it would be the nurse's duty to call for the physician. Her ability to recognize the variations in the heart sounds would be of help in informing her when she should send for him. The fetal heart sounds are heard through the abdominal wall, usually at a point where the child's back presses against it; they resemble the muffled ticking of a watch, except that the beat is double. Their frequence is 144 to the minute, much more frequent, therefore, than the mother's pulse, which may be recognized in the pulsation of the large artery of the body (the aorta), or in the rushing sound of the uterine souffle. In listening for them the woman

should be placed upon her back with her knees unbent. The clothing should be pushed away from the abdomen and the latter covered by a smooth towel. The nurse should place herself usually on the left side, as the heart beats are more frequently heard on this side, with her back toward the patient's head. This insures less constraint in the nurse's attitude as she bends over the woman. Sometimes it is better to turn the patient toward one or the other side, in order to bring the surface of the child over which the heart beats are to be

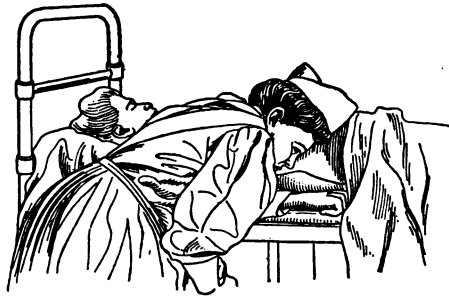

FIG. 10.—Position for nurse to assume in listening to fetal heart sounds.

heard toward the mother's abdomen. The frequency of the fetal heart beats may be estimated by counting for one-twelfth of a minute; that is, for one-half the space marked between the numbers on the second dial of a watch. There should be twelve beats in this space of time, or 144 beats to the minute. If during labor this number is decreased to less than 100 in the interval between pains, or increased beyond 190, there is urgent necessity for interference, and the condition should be reported to the physician.

It will be noticed that the positive signs, the fetal movements and fetal heart sounds, occur late in pregnancy. In the early period the only way

we may be able to be positive of pregnancy is by studying the signs in combination. When a woman complains, for instance, of absence of menstruation, morning sickness, and abdominal distention we may say, from the grouping of these signs, that in all probability pregnancy exists.

CHAPTER IV

THE DURATION OF PREGNANCY

THE duration of pregnancy is forty weeks or two hundred and eighty days, less the duration of an average monthly period, namely, five days. It is difficult to ascertain exactly the date on which impregnation occurs. For this reason the calculation is usually made by counting two hundred and eighty days from the beginning of the last menstrual period, assuming that impregnation takes place within a day or so after this period ends. It is supposed that labor comes on at what would correspond to the tenth monthly period. This is probably right, as labor, in all likelihood, begins from the same impulse as that which induces menstruation. A safe method of calculating is to ascertain the date on which the last menstrual period began, count back three months, and add seven days. This gives the duration of pregnancy as nine calendar months, the seven days being added to allow for the completion of the menstrual period and the occurrence of impregnation succeeding it. This gives two hundred and seventy-three days as the actual duration. In the case of most women this is too short. But by accepting it as the average duration it gives a safe margin for the engagement of the nurse and the preparation for labor. We must bear in mind that it is possible for impregnation to occur just before the approach of a monthly period, so that a period of approximately three weeks would elapse between the appearance of the last menstruation and conception. If this were the case the method of

calculation described above would not answer and the duration of such a pregnancy would extend beyond the expected limit. This is probably the explanation of some of the instances where pregnancy has exceeded forty weeks. In the case of multiparous women, if the previous pregnancies have been of short duration, it will be safe to calculate on an early date for the expected labor.

There are two other means of establishing the date of approaching labor. They are not definite, but may aid in confirming the calculation based on the date of conception. One is by counting from the date of quickening or the sensation of the life of the fetus, the other from the date of lightening. The time at which these events occur depends upon whether the woman is passing through her first pregnancy or not. In primiparous women life is felt usually toward the end of the fifth month. This would correspond to the end of the twenty-second week. In multiparous women it is felt usually two weeks earlier than this; namely, at the end of the twentieth week. Thus, in primiparous women, to complete the period of forty weeks, eighteen weeks would elapse from the date of quickening; in multiparous women twenty weeks would elapse. As to lightening, this is not so definite, as its occurrence may vary from three weeks to a period just before labor. It is more certain in primiparous women, as mentioned above, and in them it occurs about three weeks before labor.

The nurse is often asked as to the delay in the approach in labor, and where the date of the beginning of pregnancy may be approximately calculated the delay becomes important, as pregnancy may be abnormally prolonged. In such instances the bones of the child's head become unduly ossified and the development of the child progresses too far. Thus, a difficult and prolonged labor follows.

Where, therefore, pregnancy continues for three or four weeks beyond the estimated period the physician should assume the responsibility of explaining the condition to the patient, as it might prove to be a grave error on the part of the nurse to undertake to assure the patient that her condition is favorable.

CHAPTER V

THE ANATOMY OF THE BIRTH CANAL

Pelvis.—First, and most important, is the pelvis. This is the bony encasement containing the organs of the lowermost portion of the abdominal cavity—the uterus and its appendages, the bladder, and the rectum. The pelvis is circular in shape and of more or less irregularity of contour. The upper portion flanges outward on either side, giving to the pelvis a funnel shape.

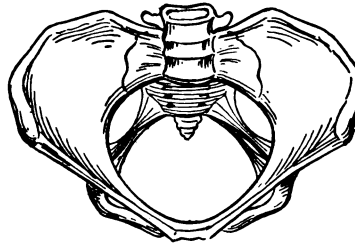

FIG. 11.—Outline of the bony pelvis looking into the inlet from above.

The function of the pelvis is three-fold: It serves to support the body by transmitting the weight of the trunk to the thigh-bones (femurs); it serves as a protecting encasement for the pelvic organs; by its configuration and the resistance of its bony structure it serves as a directing canal for the fetus in its expulsion.

There are two divisions of the pelvis, the upper or funnel-shaped portion, called the *false pelvis*, and the lower, canal-shaped portion, called the *true pelvis*. The circular, more or less constricted

portion, where the true pelvis joins with the false pelvis, is called the inlet or brim of the pelvis. The outlet is the inferior opening of the true pelvis; it is directed somewhat forward, to correspond to the curve in the birth canal. Between the outlet of the pelvis and the space above left by the deficiency in the anterior wall of the false pelvis is a bony arch called the *pubic arch* or the *symphysis pubis*. The posterior wall of the cavity of the pelvis is bounded by a wedge-shaped bone, slightly concave so as to correspond to the hollow of the pelvis, called the sacrum. The lower tip of this bone is the *coccyx*. The upper forward projection of the sacrum is called the *promontory*. It is between this latter point and the symphysis pubis that the most important of the internal diameters of the pelvis extends. This is called the *conjugate diameter* and is that which is shortened in conditions of deformity giving rise to difficult labor.

The **pelvic organs** are: first, the uterus, which is suspended in the mid-line of the pelvis, inclined slightly forward, and supported by ligaments which are attached to the bony walls of the pelvis. Behind the uterus, toward the left, is the rectum or lowermost portion of the bowel. To either side, running outward from the upper portion or fundus of the uterus, are the Fallopian tubes, which form a direct pathway for the ovum from the ovary to the interior of the womb. The ovaries are situated at the sides of the pelvis and are attached to the outer or fimbriated extremities of the tubes. They, together with the Fallopian tubes, are attached to the broad ligaments. These extend on either side of the uterus and serve as supports for the latter.

The birth canal proper begins in the uterus and is continued downward through the mouth of the womb, which has an internal and external opening—the internal and external os; through the

cervix, which is limited above by the internal os and below by the external os; through the vagina, which connects the mouth of the womb with the

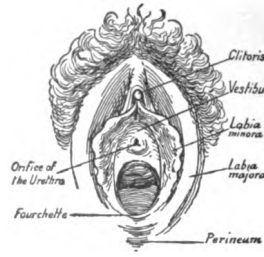

FIG. 12.—The outlet of the vagina.

vulva or external opening. The folds which cover the latter are in two sets: the outer, or those which are covered with skin and contain considerable fat

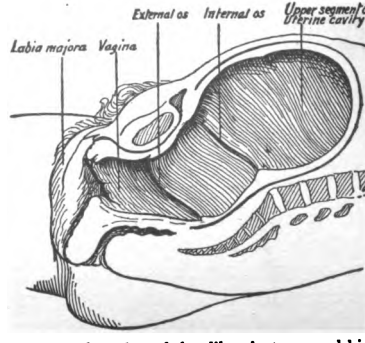

FIG. 13.—Lateral section of the dilated uterus and birth canal.

—the labia majora; and the inner, which are covered with mucous membrane—the labia minora. Between the latter, where they meet at their upper portion, is the clitoris, a small, projecting enlarge-

ment. Below the clitoris is the vestibule, in the center of which is the orifice or opening of the urethra, the duct which connects with the bladder.

The labia majora, as they are carried backward beyond the posterior angle of the vulval opening or fourchet, become incorporated with the skin of the buttocks. Beyond the fourchet the space intervening between this and the anus or external opening of the bowel, is called the perineum. This is the stretch of skin and underlying tissue which undergoes distention as the head passes through the vulva. It is very apt to be torn with delivery of the head.

CHAPTER VI

THE PRESENTATION AND POSITION OF THE FETUS

THE fetus is maintained within the uterus in a flexed attitude, usually with the head downward, with the arms and legs folded. As labor comes on the posterior pole or occipital region of the child's head, owing to the flexed position of the latter, enters the inlet of the pelvis and is maintained throughout as the pioneer or advancing portion of the child until the final stage of labor. The head thus becomes the presenting part. In other words, the presentation becomes that of the vertex or head.

The position of the head is designated according to the relation which the occipital end of the head bears to the right or left side of the pelvis, as well as to the anterior or posterior portion of the latter. If toward the left and forward the position is designated as the *left occipito-anterior position*; if toward the right and posterior, the *right occipito-posterior*. The left occipitoposterior and the right occipito-anterior are unusual positions of the head.

If the position of the child is reversed in the uterus so that the head is toward the fundus and the buttocks toward the pelvic inlet, we have to deal with a *breech presentation*. Here the child's sacrum is the point by which the position is designated, and we may have a sacro-anterior or a sacroposterior position, the sacrum pointing either to the right or left side of the mother. With the child presenting thus, if the legs are unfolded and the feet drop downward toward the pelvic outlet, the presentation is spoken of as a footling presentation.

If the child descends with the face downward we speak of it as a *facial presentation.* Here the chin is the designating point. The chin is usually anterior and, using the Latin term for chin, we may speak of a right or left mento-anterior position.

If the head is pushed aside from its proper line of descent and in place of it the shoulder or arm descends we speak of a *shoulder presentation.*

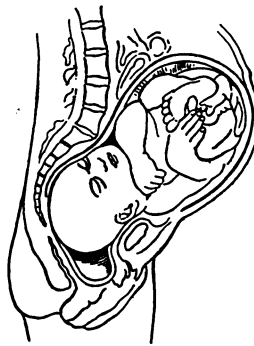

FIG. 14.—The attitude of the fetus in normal presentation.

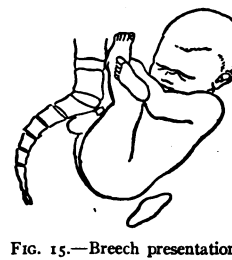

FIG. 15.—Breech presentation.

The nurse should be aware of this classification of presentation and position, as the progress of labor is governed by the manner in which the presenting part of the child is adapted to the bony canal through which it has to pass. If this adaptation is perfect, as, for instance, in the left occipito-anterior position of the head, the fetus will descend promptly, other conditions being favorable. If, on the other hand, a part other than the head presents, or if the position of the presenting part is abnormal in its relation to the pelvis, the adaptation is faulty and the part will descend with difficulty. The outcome of labor will be modified

accordingly, and the patient will deliver herself successfully or she will have to be delivered.

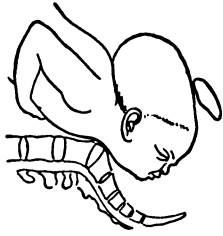

FIG. 16.—Face presentation.

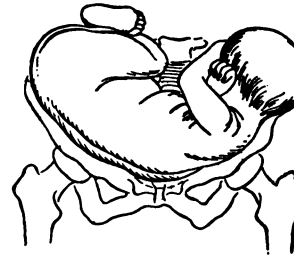

FIG. 17.—Shoulder presentation.

As noted above, the head is the part which usually presents, and we speak of this as a *normal presentation*. The position of the head within the pelvis undergoes a certain evolution or change of direction; this change constitutes what is called the Mechanism of Labor.

The first stage of the mechanism of labor is marked by **Flexion;** that is, a bending of the

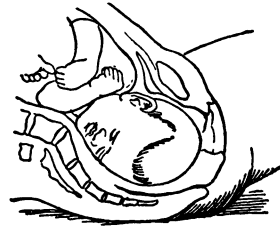

FIG. 18.—Flexion.

child's head upon the chest, so that the occipital end advances first (Fig. 18).

The next by **Descent.** This explains itself. It simply means the downward progress of the head through the pelvic canal (Fig. 19).

The third stage by **Rotation**; that is, the turning of the head so that its narrow diameter will pass the narrow diameter of the pelvis. This

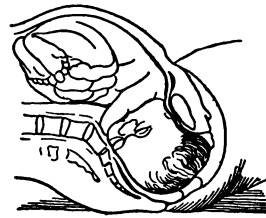

FIG. 19.—Descent.

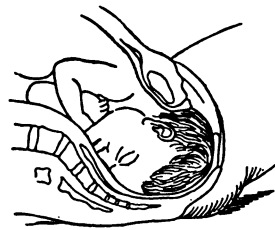

FIG. 20.—Rotation.

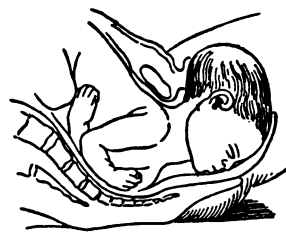

FIG. 21.—Extension.

turning is with the occipital end directed forward (Fig. 20).

Afterward **Extension** takes place; that is, the

flexion of the head disappears and the head is bent toward the child's back, as it emerges from the birth canal (Fig. 21).

The last of these alterations in direction of the progress of the head is spoken of as **External**

FIG. 22.—External rotation.

Rotation. By this is meant the rotation of the head after it is delivered, so that the occiput assumes the same position that it occupied when entering the pelvic canal (Fig. 22).

These various changes are included under the general term Phenomena of the Mechanism of Labor.

CHAPTER VII

THE NURSE'S PART IN THE MANAGEMENT OF PREGNANCY

THE patient who believes herself pregnant is likely to place herself under the care of her physician before she consults her nurse. Nevertheless, patients in well-to-do circumstances feel assured of their safety in having the additional care of a competent nurse. Moreover, now that good nurses who devote themselves to this branch of practice are steadily engaged, every woman, as soon as she is sure of being pregnant, is likely to select her nurse in order to secure her. The nurse, therefore, becomes more and more associated with her patient during pregnancy. Correspondingly, during this time the opportunity to care for her becomes greater. This does not lessen the physician's responsibility, as upon him devolves the duty of outlining to the nurse every particular of the care of his patient.

At the nurse's first interview the first question to come up is the date of expected labor. Next, the woman, if she has had children before, will probably allude to the course of her earlier pregnancies and labors. It is important for the nurse to know the history of her patient in this respect, as she, as well as the physician, may be warned against any accident that might be likely to recur. The knowledge must, however, be elicited carefully, in order that the patient's fears may not be aroused by pointed questions. After this preliminary visit the nurse should call on the physician in charge of the case and learn from him the particulars of his

method of conducting labor, receive any special instructions, and obtain a printed list of the supplies needed at the time of labor. It will hardly be possible at this interview to define the date of expected labor, but the nurse should call some time later upon the physician and learn from him when he expects her to come to the patient, telling him at the same time what her own engagements are and what her address will be in the interval.

Preparation of the Patient for Examination.—Among the first duties the nurse will be called upon to perform is that of preparing the patient for examination. The nurse is not likely to be present at the time when the physician makes his first examination to establish the diagnosis of pregnancy. Should the course of pregnancy be abnormal, examination becomes imperative. Under all circumstances during the last three weeks of pregnancy the necessity of examination is always present. The nurse's part in this may be described as follows:

In the first place the accessories—light, proper level of couch or bed, nearness to bath-room, hot-water supply, privacy of the room in which the examination is made—should all be thought out. Such examination is usually made in the patient's house, so that these accessories must be provided for. In hospital practice they are always present. It is very important that the patient's bowels should have been moved before the physician's visit. The specific articles to be on hand are: towels, fresh hand-scrub, hot water in pitcher, a fresh cake of soap, vaselin or one of the patent solutions of green soap such as lysol, two basins, one for rinsing the hands and the other for antiseptic solution, absorbent cotton which is separated into pledgets or made into sponges—as the speculum may be used and the cotton may be needed to cleanse the deeper portion of the vagina, in order that a distinct

view of the cervix within the speculum may be obtained—a waste-pan, and soft rubber catheter.

Should the examination be conducted in the hospital, where the selection of instruments is left to the nurse, she should have ready a three-bladed speculum, a single tenaculum-forceps, and a dressing-forceps. The Sims speculum should be in readiness in case the physician wishes to examine the patient on her side (Fig. 23). Rubber gloves should be also at hand.

If the examination is for diagnosis, the woman should be placed first in a horizontal position with

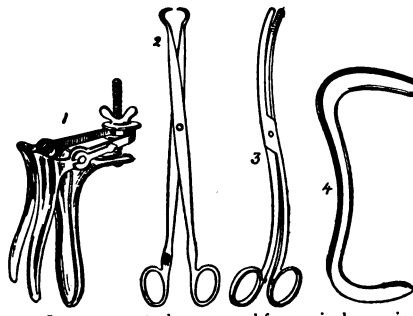

FIG. 23.—Instruments to be prepared for vaginal examination. 1, Trivalve speculum; 2, tenaculum-forceps; 3, dressing-forceps; 4, Sims' speculum.

her legs extended, in order that the abdomen may be exposed for inspection and palpation. The patient should be so arranged that the doctor can have access to either side of the couch. If she is placed in bed it should be taken for granted that he prefers to have her toward the right side. All the waist-bands should be loosened. In fact it is better to have the patient wear her night-dress. She should be covered with a sheet and a smooth towel should be at hand to spread over the abdomen in case the physician intends to listen to the fetal heart. A coarse new towel is unsuited for this purpose. It is unnecessary in most instances to cover

the patient's face, as it merely increases her sense of modesty.

At this examination the physician may need to *measure the pelvis*. He may require, therefore, notes of his measurements, and the nurse should be conversant with the method of measuring the pelvis and the terms in which the measurements should be recorded. The instrument with which what are called the external measurements of the pelvis are made is called the *pelvimeter*. It resembles a pair of calipers of large size. At the point where the arms are pivoted is a dial marked in inches and centimeters, so that when the points are separated the distance between them is indicated on the dial. The measurement which is usually taken first is that between the superior spines of each ilium (the upper bone of the pelvis which expands outward on each side above the hips). This is sometimes called the *interspinous diameter*. In a normal patient it is 10 inches or 26 cm. in length. The next measurement is that between the crests or upper edges of the iliac bones. This is the widest portion of the pelvis. This diameter is 11 inches or 28 cm. It is called the *intercristal diameter*. A less important diameter is that between the prominences of the thigh bone on either side. This is spoken of as the *bitrochanteric*. It measures 12½ inches or 31 cm. The foregoing are the transverse diameters. The patient is now turned on her side and the anteroposterior diameter is taken. It is called the *external conjugate* and is measured from the projection of the last lumbar vertebra to the upper portion of the front wall of the pelvis, called the pubic symphysis. It is 8 inches or 20.3 cm. Other measurements are taken, notably the right and left oblique. These, however, are not important and need only be mentioned in order that the nurse may know of them in case she is required to record them at the time of examination.

The circumference of the pelvis is usually also taken. For this purpose a tape measure marked in inches and centimeters is used.

As soon as the abdominal examination is completed, the patient is placed upon her back and brought to the edge of the bed, facing the light. The knees are fully flexed so as to bring the hips as far forward as possible and relax the abdominal muscles. The feet may be placed on chairs facing one another at the side of the bed or may be supported by the nurse holding the patient's knees. The sheet which protects her should be arranged so that one corner is draped between the knees and

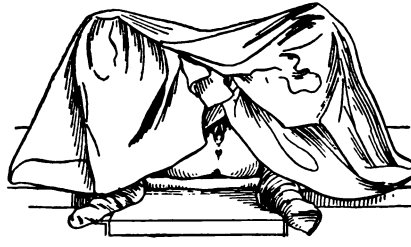

FIG. 24.—Arrangement of sheet with patient prepared in dorsal position for examination.

hanging in a point. This point or corner can be pushed back (Fig. 24). It will stay thus perfectly secure, still at the same time completely covering the knees. This arrangement is much better than folding the full end of the sheet back under the clothing and around the legs in horseshoe shape, as is usually done. It is less bulky and stays more securely in position.

For the *Sims position* the patient is arranged usually on her left side, with the chest downward so that the hips are comparatively elevated and the uppermost leg flexed and drawn up above the opposite knee. The buttocks should be directed

toward the light. Both on account of the elevation and the proper resistance offered by a hard surface, a table is to be preferred. The patient's hips should be well toward the edge of the table. The sheet which is used to cover her should be folded so as to leave the vulva exposed.

If a speculum is used it should be boiled in advance, together with whatever other instruments are needed. They should be covered with a sterile towel, and the speculum heated by immersing it in warm water. It should also be lubricated before it is handed to the physician. The nurse should remember also to keep both the speculum and the instruments out of the patient's view. The greatest cleanliness and care in preparation should be carried out in every examination, but it is especially important that toward the end of pregnancy the woman should be protected in this respect, as an unclean examination would result in septic infection in case labor should shortly come on.

Clothing.—All forms of clothing that compress either the chest or abdomen should be given up. Early in pregnancy a tight-fitting corset is apt to exert downward pressure. This is not especially injurious at this stage, but adds greatly to the woman's discomfort. Later, if the side-bones or steels are taken out, the girth of the corset is increased. A special corset made with side lacings is suitable for the latter period of pregnancy. It should have shoulder-straps and on the sides whalebones and lacing. The corset should lace in the back as well. Toward the front, on either side, silk elastic is let in, parallel to the lacings, to give spring in the front and to accommodate the enlarging abdomen (Fig. 25). The corset can be easily taken apart and washed. One of the advantages of such a corset lies in the suspension

given to the skirts by the shoulder-straps, thus relieving the waist from pressure. If the woman is able to wear a loose old corset from which the steels have been removed, provided she can dress lightly without too much weight from the hips, she is much more comfortable than in some of the so-called maternity waists. The latter are deficient in support to the back. Band garters should not be worn, as they constrict the veins and increase the tendency to swelling of the ankles and feet.

FIG. 25.—Pattern of maternity corset.

Fortunately the skin circulation is very complete in most women and the heat radiation is active. They, therefore, require no greater warmth in clothing than that which they are accustomed to, provided they are protected from chill. Every function of the body should be maintained at the highest efficiency, The effect of pressure from clothing interferes first, with respiration; second, with circulation (from displacement of the heart), as well as with the action of the liver. By pressure the enlargement of the uterus is also retarded.

Exercise, Bathing.—Should anything occur to call for the physician to limit the amount of exercise he will make the proper restrictions. Otherwise, the woman should adhere to her accustomed rule,

avoiding any form of exertion that is likely to put the abdominal muscles under strain, such as lifting, stooping, stretching the arms, sweeping, and straining, as in the effort to overcome constipation. There is no doubt that some women carry out all these forms of exertion and more too—indeed, it is incumbent upon them to—for we are dealing in our discussion not merely with the rich, but with the average woman who may be already the mother of other children requiring her care—and yet these women may not suffer any ill effects. On the other hand we should remember that our considerations include also the delicate type of woman, who through an irritable condition of her nervous system, or through an earlier inflammation of her pelvic organs, has not the physical capacity to indulge in exertion. Walking, within the limit of fatigue, is usually beneficial. It especially helps the woman by keeping her in the open air. This is to be modified in the winter on account of the cold and the danger of slipping. Exercise by riding on horseback is not to be advised. Motoring is questionable. The tendency is for women to indulge in long trips, which are hurtful, although the benefit of being in the fresh air is to be considered. Good roads should be followed, when automobiling is allowed, and the trips should be short and leisurely. As a matter of convenience in shopping and station work, it is admirable.

There is one thing to be borne in mind in connection with daily exercise; that is, no day should pass without time being taken for rest, preferably in the afternoon following the mid-day meal: a nap of fifteen to twenty minutes. Outside of the question of sleeping, lying down relaxes the abdominal muscles and saves the nervous system from unrelieved strain.

During the mid-period of pregnancy, after the end of the fourth month, the woman's health

is apt to be good, so that some of the restrictions that bind her up to this time may be relaxed. After the seventh month the patient should avoid driving except for short trips; automobiling, absolutely, as well as riding in electric and railroad cars. The up and down motion and the pressure that comes while the woman is sitting are dangerous. In stepping upward or alighting from trolley or railroad cars the patient is apt to jar herself. This makes this form of travel especially undesirable.

Physicians who have had experience in guarding patients from the danger of miscarriage invariably advise against travel. The place for such a patient is at home, unless the discomfort of hot weather makes it imperative to seek a change.

Women who are in the habit of taking cold sponge baths should omit them as soon as pregnancy is suspected. A tepid sponge is preferable. In cold sponging the chill, exertion, and exposure produce shock. Prolonged hot baths are too relaxing. During the eighth and ninth months bathing should be carried out with great care. During the last few weeks of pregnancy the nurse is likely to be constantly with her patient and the particulars of the latter's care may devolve fully upon her. It is, therefore, important that the nurse should be informed of the risk of improper bathing. If the patient should be left to herself she might be subject to accident in getting in and out of the tub. To avoid this the nurse should oversee the bathing and insist that the patient stand in the tub. She should be helped in and out. The bath should be given in the form of a tepid shower, preferably from a pitcher (Fig. 26). The nurse should see to it that there is no shock from this, and that the patient is carefully dried without

too great exertion on her part. She should stand in water at a temperature of 105°, and should be showered with water at 102°. Evening baths are preferable. Hot plunges are apt to bring on labor.

Sea bathing, although without risk to some women, is not to be recommended. In the beginning of pregnancy the temptation for a patient to indulge in sea bathing is not great, on account of the usual discomforts of this time, which make her loath to exert herself to this extent. In the middle

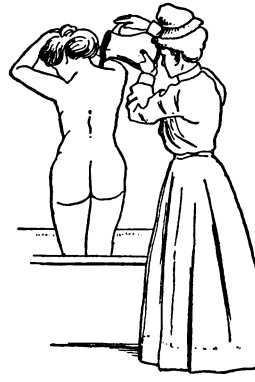

FIG. 26.—The bath in the later stage of pregnancy (after Edgar).

of pregnancy her inclination to indulge in bathing should be restricted, for the result from shock is an unknown possibility in any case, and if the patient should be disposed to miscarry, sea bathing would be dangerous. It takes very little effort to induce the patient, if she has her welfare at heart, to look at the matter reasonably.

Diet.—During the early period of pregnancy the nausea which is usually present interferes with the patient's appetite. At this time she may be indulged in her cravings to almost any degree.

Inasmuch as her breakfast is often omitted on account of nausea, food in the interval between this hour and her mid-day meal should be given. If she is most hungry at her evening meal, she should be allowed to satisfy her appetite, as the necessity for nourishment is to be met. Beef is to be avoided after the patient is fully advanced in pregnancy. Fruit and cereals are to be recommended on account of their effect in overcoming constipation. The relation of the diet to the condition of the kidneys will be taken up in the next paragraph.

The Urine.—Examinations of the urine are made from time to time by the physician, but it is the nurse's province to see that the specimens are furnished, and during the last few weeks of pregnancy she will be called upon to observe the character and the amount excreted. We should bear in mind that throughout pregnancy a normal output of urine is essential to the patient's health. If the kidneys do not perform their function the health of the patient is impaired through the absorption of the waste materials which should be gotten rid of in the urine. For this reason the physician is particular about two points: first, as to the amount of urine excreted; second, in relieving the strain upon the kidneys by modifying the patient's diet. A diet rich in meat is irritating to the kidneys; it requires the conversion of the nitrogen (the chemical basis of a meat diet) into urea, and, unless this is perfectly accomplished, the action upon the kidneys of the resulting chemical product is injurious to the patient's health. Red meat, that is, beef and mutton, is always prohibited in the last three months of pregnancy, and earlier if there be any indication of imperfect action of the kidneys. Fish and oysters, lamb, fowl, and salt meats, with eggs in moderation, are permissible. Vegetables, and especially milk, are desirable.

In obtaining the urine for examination the nurse

should learn from the physician whether he requires the morning urine, a sample of the total amount excreted in twenty-four hours, or a catheterized specimen. If he wishes the morning urine it should be passed in a clean vessel and promptly put in a medicine bottle which has been cleaned and dried—a bottle of not less than four fluid-ounces, for it requires this amount to test the specific gravity. A fresh cork should be used, the specimen placed in a cool place, and handled with as little disturbance as possible. It should be sent to the laboratory or the physician's office, with the patient's name attached, and a note of the date and hour of its collection. If a twenty-four hour specimen is required it is best to collect it in a tall narrow vessel, preferably a large measuring glass, and to cover it with a loose disk of blotting paper until transferred to the receiving bottle. Only a portion of this amount is forwarded to the doctor. The nurse should always be ready to report the full quantity passed in twenty-four hours, of which this is a sample.

The urine may have to be obtained by catheter: first, where it is necessary to keep it from contamination by vaginal discharges; second, where the patient is unconscious of the act of voiding; third, where some obstruction to the passage of urine is present. The quantity of urine drawn should be carefully measured, and an amount saved sufficient for examination, when it can be obtained.

The Care of the Nipples.—In the care of the nipples two objects are to be kept in view: the first is to favor the protrusion of the nipples by invigorating the muscular fibers which are found in their structure; second, to keep the surface of the nipples absolutely clean. If the first object is attained, the infant after birth will take the nipple without struggling; and if the latter, the danger of

infecting the nipple through fissured surfaces will be obviated. To accomplish these ends the following method should be adhered to during the two latter months of pregnancy: first, routine daily washings with warm water and castile soap, followed by gentle massage of the base of the nipple; second, anointing the nipple with cocoa butter at bedtime and cleansing it each morning, before washing, with undiluted alcohol. If this is practised the delicate crust formed by the dried secretion of colostrum is removed and the underlying surface of the nipple kept clean.

Vaginal Discharges.—The nurse's familiarity with her patient's condition is not perfect unless she knows about any vaginal discharge which may be present. Leukorrhea is usually present in greater or less degree and may occur both in the beginning of pregnancy and at the approach of labor. Bleeding, however, has a greater significance. It should be promptly reported. Notice should be taken as to whether it occurs with pain or not, the amount, the presence of clots, whether it occurs regularly or irregularly; the presence of other symptoms, such as faintness, quickening of the pulse, or pallor, should also be observed. A purulent discharge should not be mistaken for leukorrhea. It is always significant and should be reported. One of the principal causes of this is gonorrhea.

CHAPTER VIII

THE OUTFIT AND PREPARATION FOR LABOR

DURING pregnancy the nurse will have an opportunity to obtain for the prospective mother the supplies which will be needed. The physician usually furnishes a list to the patient, as well as one to the nurse. Certain of these supplies should be procured by the end of the third month, lest an early miscarriage should occur. For instance, the gauze for pads and sponges, absorbent cotton, green soap, the douch-bag, and bedpan should be on hand by

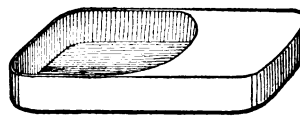

FIG. 27.—Douche-pan.

this time. By the end of the sixth month the full list, including the things necessary for the infant, should be ready.

As to antiseptics, the nurse should herself be supplied with bichlorid tablets, which are necessary in emergency; they should, however, be kept absolutely in her hands, to avoid the risk of accident. The solutions for the hands, namely that of permanganate of potash and of oxalic acid, complete the list to be furnished before labor. In case, however, of an emergency they may have to be omitted, as they are usually prescribed with the other articles ordered by the physician in the last month of pregnancy.

The list of supplies may be divided under four headings: First, those articles which concern the physician's management of the case; second, the domestic outfit; third, the outfit for the infant; fourth, the articles necessary for the nurse to have. The articles comprising the physician's and domestic supplies and the infant's outfit may be procured by the patient.

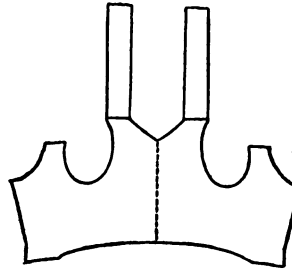

FIG. 28.—Murphy breast-binder with shoulder-straps.

In collecting these supplies it is best that the nurse should have full supervision of the combined lists, with the exception of those articles which are furnished by prescription directly to the patient in a package, which is to be opened only at the time of labor.

Supplies for the Physician's Use

Two 1-pound packages of absorbent cotton,
One sealed package of sterile gauze, 25 yards,
4 ounces of tincture of green soap,
One bottle of vaselin,
3 ounces of powdered boric acid (Squibb's),
Whiskey,
2-quart bottle of alcohol;
also the following articles supplied by prescription:

3 ounces each of permanganate of potash and oxalic acid,
Three ¼-pound cans of Squibb's ether,
3 ounces of fluidextract of ergot,
2 ounces of creolin or one bottle of lysol,
1 bottle of antiseptic tablets,
1 bottle of antiseptic tablets, bichlorid of mercury.

Domestic Supplies

Enameled bed-pan,
Enameled douche-pan (square or oval),
Fountain syringe holding 2 quarts,
Rubber sheeting, 5 yards in length and 1½ yards in width,
Two bed-pads of wadded nursery cloth, each 2 yards square, 3 pads 1 yard square, also 4 yards, ¾ yard wide,
Unbleached muslin, 4½ yards, 1 yard wide, to be torn into six binders 1½ yards in length and ½ yard in width less the selvage, which should be removed,
Two new enameled basins,
Castile soap,
One bottle of olive oil,
Soft muslin from which to cut two breast-binders (Murphy pattern),
Towels, sheeting, and plain nightgowns for the patient's use,
One open slop-pail,
Enameled waste-pan with cover, for baby's diapers.

Infant's Supplies

Bird's-eye linen or cotton for diapers,
Soft flannel blanket,
Box of talcum powder,
Infant's hairbrush,
Half a dozen wash-cloths,
Silk sponge,

Squares of sterile gauze for washing the mouth,
Soft bath towels,
Four dozen safety-pins, two sizes. (The best pins are those manufactured by Kirby, Beard & Company, English manufacturers.)
One package of sterilized cord tape.
Eye-dropper,
Infant's bulb syringe,
Bath thermometer,
Bath-tub,
Scales for weighing,
Soft flannel for six binders, each 6 inches wide and ½ yard in length,
Two afghans,
Four undershirts of silk and wool, with long sleeves,
Night gowns or slips of flannelet or muslin,
From 8 to 10 slips,
Four flannel petticoats,
Four pairs of socks.

Supplies for the Nurse's Use

Two fresh hand scrubs,
Medicine-dropper,
Pair of blunt-pointed scissors,
Soft rubber catheter,
Glass catheter,
Glass douche nozzle,
One rubber apron,
One flannel apron to be worn when bathing infant,
Two clinical thermometers,
Temperature chart,
Weight chart,
Linen bag with draw-string for gauze or cotton sponges.

Selection and Preparation of the Room.—When the nurse arrives she will have an oppor-

tunity of selecting the room. The condition of the household will influence her in this selection. If there are children in the house the room should be away from the noise of the nursery or the clatter of the stairs. It should be properly heated and with a fair exposure, especially if in a country house. The nearness to the bath-room is probably the first consideration, and, if convenient, an adjoining room should be used for the infant. A room above the second floor makes too much stair climbing for the nurse. A room with an open fireplace should be selected, if possible, on account of ventilation.

As to the furniture and preparation of the room, the contents of the room, as far as expedient, should consist of only such furniture as may be found in a well-equipped private room in a hospital: that is, it should contain a three-quarter bed, with a firm mattress and not too low; the bed should be light enough to move and should be fitted with casters which are not too readily moved. The room should contain a couch, arm-chair, two straight chairs, chiffonier, folding screen, foot-stool, bed-prop, firm bed-room table, small table, or an invalid table, and a bed tray. The lights should be properly shaded, the floor bare, with light rugs. A wash-stand may be needed if the bath-room is not accessible. The nurse should sleep in an adjoining room with the baby, if convenient; if not, she may use the couch or an extra cot.

As to the preparation of the room, the nurse will have opportunity to carry this out more leisurely and with the assistance of some one in the house, if she undertakes it in advance of labor. If this is done the room should be closed while waiting, and dusted daily. There is no objection to light cretonne hangings for the windows, or sash curtains of light muslin; they can be kept clean and the window hangings carefully shaken. The aspect

of cheerfulness which comes from a certain degree of furnishing is necessary. If carpet is down it should be thoroughly gone over with a broom-mop moistened in bichlorid solution, after having been thoroughly swept. The wash-boards and woodwork should be wiped down, all picture frames should be gone over, and both the backs and the wall-space behind them carefully wiped. Fresh bureau and tray covers may be used. There is no objection to simple ornaments.

Sterilization.—At a safe time before labor is expected the vulval pads, the binders both for the breast and abdomen, bed-pads, absorbent cotton, gauze for sponges, sheeting and towels—in other words, all dressing material which comes directly in contact with the patient should be sterilized. This is to be carried out by dividing the different dressings in separate packages. To handle the material the nurse should see that her hands are thoroughly washed and immersed in a bichlorid solution, 1 to 2000.

In preparing the vulval pads, not only should the nurse's hands be disinfected, but she should work on a freshly laundered sheet with sterile scissors. Two layers of gauze, one-half yard wide, are cut across so as to make squares one-half yard in each direction. A layer of absorbent cotton 4 inches wide and 1 foot long is laid across such a square; the edges of the gauze are folded over this so that when one surface of the absorbent cotton is protected by two layers of gauze, the other surface, namely, that which is away from the vulva, is covered by four layers, namely, by those edges of the gauze which overlap. To keep the cotton in place the free edge of the gauze is tucked under at both ends.

Moist sterilization in private work is best. This may be carried out in the household as follows: A clean colander receives the packages to be

sterilized. This colander is placed in an open dish with depth enough to allow the former to be submerged in water without the package becoming wet. The dish in turn is placed in a clean dishpan in which water is poured to a depth of 4 or 5 inches; the whole is covered with a towel and placed over the fire, the water being allowed to boil until the package is thoroughly steamed. The latter is then removed and placed in the oven until all moisture has evaporated.

Where it is more convenient to use dry sterilization, the package is placed on a new tray and put in the oven with moderate heat; twenty minutes will suffice. To avoid scorching, a dish containing water should be slid under it. The package should be looked at occasionally.

It may be necessary to use dry sterilization for large packages, such, for instance, as those containing sheets, bed-pads, and towels. The sterilized packages should be labeled by pinning a slip marked with the contents on the outside. They should then be laid away in orderly arrangement until needed. In hospital practice the packages are placed in the autoclave for dry sterilization.

The bed-pan, douche-pan, and douche-bag and nozzle should be prepared by scalding them; they are afterward wrapped or covered, each with a sterile towel.

CHAPTER IX

ABNORMAL CONDITIONS IN PREGNANCY

VARIATIONS from health occur in pregnancy and are usually dependent upon the condition itself. Some of the disorders, such as nausea, constipation, and oppressed breathing, are scarcely to be considered as departures from the normal. On the other hand, when they are exaggerated they take their place among graver conditions.

The nurse cannot be too carefully trained in her observation of the course of pregnancy, as upon her may depend the recognition of symptoms that demand the physician's care.

The following list includes the abnormalities other than general diseases:

1. Excessive vomiting of pregnancy.
2. Chorea.
3. Fainting or syncope.
4. Inflammation of the gums and salivation.
5. Dropsical swelling or edema.
6. Albuminuria and eclampsia.
7. Dilatation of the veins (varicosity).
8. Hemorrhage.
9. Death of the fetus.

Surgical complications of the abdominal and pelvic organs:

1. Appendicitis.
2. Ectopic gestation.
3. Fibroid tumors of the uterus, cancer.

Venereal diseases:

Gonorrhea and syphilis.

Excessive Vomiting of Pregnancy.—Should the usual nausea increase to such extent as to make

it impossible for the patient to take food, or the attacks of vomiting become so frequent as to exhaust her, she has entered a condition that is dangerous. In the early months it would be unwise to put too serious a construction on the existence of vomiting, as by proper care and treatment the patient may improve. But after the end of the fourth month a period has been entered in which the continuance of the nausea and vomiting should make us alive to the danger of the situation. The nurse will do well to study her case carefully; she should especially be aware of the bearing of the patient's nervous condition upon the vomiting. Loss of sleep, uncomfortable and exciting surroundings, previous nervous exhaustion, disappointment in the thought of being pregnant—which leads in some instances to the desire to impose upon the physician in order that he will terminate pregnancy—all these are important considerations, to be studied by the nurse as well as the physician.

The peculiar poison produced in the system of the pregnant woman may be the underlying cause of pernicious vomiting. This poison shows its effect in the action of the kidneys. To determine, therefore, whether it is present or not the urine should be examined. Especially should a careful measurement of the daily output be made and recorded by the nurse.

The important points in the management of such cases, as far as the nurse is concerned, are to see that the patient has the proper rest and quietness in her surroundings, and that she receives food frequently, in small quantities. Perfect routine in management, that is, in bringing the nourishment at stated intervals, regular sponging, specified periods of rest, are essential. The encouragement that comes from hopefulness on the part of the nurse has also much to do with controlling these cases.

Should the patient not be able to retain any food by mouth she should be given rectal enemata. Milk peptonized by the addition of liquid peptonoids, in the proportion of 1 ounce to 7 ounces, should be gently injected after being heated to 102°. Should it be proven that the patient can be kept alive only by such means, it is time for her to acquiesce in the termination of her pregnancy, as the enemata are only a makeshift and the rectum soon becomes unable to retain them.

It may be necessary to add to the treatment rectal injections of saline solution, in order to quench thirst. The temperature and pulse should be carefully taken.

Chorea.—Like the vomiting of pregnancy, the twitching of the muscles called chorea may be of mild or severe type. The patient has no control over the choreic movements. She is seen to twitch with the arms, shoulders, legs, in the eyelids, and the muscles of the upper part of the face. Excitement is apt to increase the muscular movements. Primiparous women are more likely to be the subjects of chorea than multiparous women. If we consider the nervous origin of chorea, this fact is accounted for by the greater susceptibility of the nervous system to the influence of pregnancy in primiparous women.

The milder choreic movements are observed in nervous women as a passing condition in the second or third months of pregnancy—frequently as an accompaniment of nausea and vomiting. As the patient improves in health and the functions of her body become adjusted to the new conditions, she improves. Fresh air, freedom from constipation, the suggestion of hopefulness, rest, and tonics are all helpful. The severe chorea which continues into a later period of pregnancy arises from a serious disturbance of the nervous system—the condition is here accounted for by a constitutional inability

on the part of the woman to go through pregnancy. Such women fail in strength. The incessant movements prevent sleep, and the chances are that pregnancy will end disastrously. The nurse should be able to appreciate the serious condition of such patients. Her knowledge of the fact that such a condition may occur should impress her with the importance of notifying the physician.

Fainting.—Unlike chorea, fainting or syncope occurs as a frequent complication of pregnancy. Although this is a nervous manifestation, it is not necessarily found in women who may be classed as nervous. Patients who are apparently free from other signs of nervousness, such as hysteria, may nevertheless be troubled throughout pregnancy with fainting. The fainting attack frequently occurs at night; that is, the patient is aroused by weakness and before she can control this she goes into a faint. In other women the fainting attacks occur on rising in the morning. The attack usually passes promptly. The nurse should try to be with the patient at the time when these attacks are apt to occur, to prevent her falling. The clothing should be loosened, the head lowered, and the face bathed with cold water. In general, to guard against the attacks the same rule of caring for the patient should be observed as in the case of mild choreic attacks. The pressure of tight clothing or the abdominal distention following a heavy meal may bring on a spell of fainting. This occurs only in a single attack and has nothing to do with the habitual fainting of pregnancy.

Hysteric fainting occurs frequently in the beginning of pregnancy in the form of successive fainting attacks, accompanied by emotional excitement. It may be the first symptom suggestive of pregnancy.

Inflammation of the Gums, Salivation.—The intolerance to pregnancy which certain women

show is revealed in the peculiar inflammation of the gums which occurs at this time—a disorder which would seem entirely disconnected with changes dependent upon the growth of the ovum.

This inflammation may nevertheless be the sign of a grave disturbance. The inflammation has frequently been observed to extend to ulceration affecting the mouth, generally, and extending into the throat. The result may be extensive gangrene terminating finally in death. Insignificant as it may appear in most cases, with such a termination in view the nurse should be informed of the seriousness of such inflammation. Patients who are particular in personal cleanliness need not be advised to keep their teeth well scrubbed. In hospital practice this must be insisted upon; the gums of waiting women should be carefully inspected. The milder form of inflammation is shown in swelling of the gums and in a tendency to bleeding. Astringent mouth washes, that is, myrrh in water or listerine with alum in water, should be frequently used. The patient should be careful in her diet. The action of the kidneys should be strictly looked after and the bowels kept open. It should be borne in mind that this condition is an evidence of a general disorder and not a simple inflammation of the gums.

Salivation, or the excessive discharge of saliva, may accompany the vomiting of pregnancy. It may also occur alone in the early months of pregnancy. Some women are distracted by the constant flow of saliva; they are unable to sleep and their health becomes seriously affected. Salivation may sometimes accompany the inflammation of the gums just spoken of, both conditions depending upon the disturbing effect of pregnancy upon the nervous system. The nurse is usually powerless to help these patients. All even the physician can do is to sustain the strength of the patient and

control, if possible, the perverted action of the nervous system.

Edema.—Dropsical swelling: This depends upon so many causes that it is difficult to approach the description of it otherwise than by considering the form in which it usually shows itself in pregnancy. Before doing so let us exclude the medical causes of edema, or those which are not dependent upon pregnancy. They are: disease of the heart, causing edema of the lower extremities and the accumulation of dropsical fluid in the abdominal cavity; also disease of the liver. This leaves for our consideration edema of the feet and ankles due to the pressure of the enlarged uterus, which interferes with the circulation of the lower extremities. Edema of this character is often relieved by rest, and the patient learns for herself that standing and walking are usually responsible for it. Edema may not depend upon this simple cause, and, when it is very extensive or involves the body generally, it is due to an affection of the kidneys peculiar to pregnancy, and is always an accompaniment of albuminuria (the presence of albumin in the urine). This form of edema is, therefore, pathologic, and in this respect it differs from the edema of pressure, mentioned above.

Although the edema complicating kidney trouble is general, the face and extremities are the parts most conspicuously affected. The skin over the instep is glazed and when pressed upon by the tip of the finger leaves an indentation which remains until the elasticity of the underlying part is regained. In the face the lower lids are usually the seat of edema. In other instances the whole face may appear swollen. The labia at the entrance of the vagina may often be markedly swollen. Slight edema of the hands is common toward the end of pregnancy. Any such local edema, however, should be enough to cause the nurse to inspect

other portions of the body where swelling is likely to occur. She should be alive also to the symptoms which accompany edema in the presence of the grave disorder of pregnancy known as the Toxemia of Pregnancy.

Albuminuria.—The nurse should be governed in her observation of a toxemic case by studying the action of the kidneys. Albuminuria is a common symptom. It is the name given to the presence of albumin in the urine. This may be detected in various ways: first, by heating the urine; second, by means of certain chemical tests. It is not necessary to go into these methods, but the nurse should remember that where albumin has been detected by the physician her patient should be considered ill, unless some other cause is responsible for the presence of albumin, such, for instance, as pus in the urine.

The deficient action of the kidneys not only gives rise to albuminuria, but causes a deficiency in the amount of urine excreted. Of course, there may be an irregularity in the excretion, depending upon the amount of fluid taken, the action of the skin, the effect of heat and climate; but where, instead of the average daily output of 48 ounces, the amount has been reduced to, say, 20 ounces, the danger signal has been flashed. It is for this reason that the collection and measuring of the urine are important in suspicious cases.

So much for the urine—what other symptoms point to toxemia in pregnancy? Beside the lesser disorders mentioned above we have to study a class of symptoms which are more or less deceptive, because they are gradual in development and often unnoticed, except in a passing way, by the patient herself. The nurse should be familiar with every one of these, because they are apt to occur toward the end of pregnancy when the patient is left in her charge. They may even escape the physician's notice.

The patient may complain, first—in the order of frequency of occurrence—of headache. That at the back of the head or base of the brain is common. Second, blurring of vision to the degree that the patient may suddenly become almost blind, or the impairment of vision may show itself in the presence of floating spots before the eyes; in other instances the patient may see double. Third, confusion of thought, or inability to use the right word at the right time, or perhaps slight loss of memory. Fourth, pain over the pit of the stomach (epigastrium), with oppressed breathing.

When any one of these symptoms occurs, together with scanty urination, convulsions threaten. These symptoms are always accompanied by albuminuria.

Eclampsia.—Eclampsia, properly speaking, is a state in which, during pregnancy, repeated convulsions occur. We have, however, fallen into the habit of using this term to designate the period preceding the convulsions as well. In fact, the general illness, of which the convulsive attacks are the most conspicuous evidences, is spoken of as eclampsia. Properly, however, the illness should be spoken of as a condition of toxemia, the convulsive stage alone receiving the designation of eclampsia.

The toxemia which terminates in eclampsia may occur unexpectedly as a complication in pregnancy. In fact, many of the minor abnormalities in pregnancy, such as indigestion, nausea, salivation, and chorea, arise from it. It more frequently occurs in primiparous women, although it is sometimes found that certain women will, in successive pregnancies, suffer from eclampsia.

A patient afflicted with eclampsia presents an alarming picture. The suddenness of the attack and the contrast between it and the preceding calmness of apparent health is shocking. The

patient grows suddenly pale. The muscles of the mouth begin to twitch and the eyeballs roll upward, adding to the ghastliness of the expression. The muscles generally become rigid, respiration ceases, and the pallor of the countenance is followed by a dusky purple. The patient froths at the mouth and splutters blood as the tongue becomes fixed between the teeth. Extensive twitching of the arms and legs appears. This gradually becomes less forcible, the breathing returns, and the patient rests in a profound coma. During the convulsions the thumbs are bent against the palms and clutched by the fingers. This condition may be repeated within a few minutes, or more or less protracted periods of unconsciousness may intervene between the attacks. In some instances but a single attack occurs.

In the presence of eclampsia the nurse should preserve her presence of mind, as upon her rests largely the responsibility of action. The patient should be undisturbed in the position in which she has fallen, provided she is not in a strained position or in one of danger. The clothing should be loosened, and the jaws separated by a spoon or brush handle, wrapped to prevent its injuring the patient's tongue. If chloroform is available it should be given for inhalation, to hasten the subsidence of the convulsion. As soon as this is over a sheet wrung out of hot water should be spread upon rubber sheeting on the bed, the clothing removed, and the patient lifted into bed and hastily enveloped in the pack and covered with blankets while heat is applied to the feet.

If the nurse is called upon to continue with the care of the patient until the nearest physician can be summoned, her next duty is to give a warm rectal injection of saline solution (a dram to the pint). The surroundings of the patient should be put in order, to do away with the impression of confusion,

the blinds closed, and the alarm of those interested in the patient calmed. There must be no ceremony in the choice of a physician; the nearest or most available should be called. He must be on hand to proceed with the next important steps of treatment, as the nurse will have gone as far as proper. If there should be any delay in his arrival the nurse must be ready with chloroform to meet the next attack. She should proceed to make a saturated solution of epsom salt, to be given in tablespoonful doses, if the patient can be induced to swallow, and to be repeated every half hour until the bowels are moved, should the nurse be so unfortunate as to have to depend upon her own efforts for this length of time.

The patient should not be left alone. The pack should be renewed. The urine should be drawn by catheter, measured, and saved. The temperature should be carefully taken, avoiding the risk of having the patient break the thermometer. It is, therefore, better, in the event of her being but partially conscious, to take the temperature in the axilla. The tension, fulness, and rate of the pulse are to be observed and recorded. During the state of coma the nurse should not sit idly by, simply waiting for the return of consciousness, but should watch the case, observing systematically the temperature, pulse, respiration, the degree of moisture of the skin, the degree of consciousness, the amount of urine voided, the bowel actions, and the state of restlessness. As to the latter, it may prove to be necessary for the nurse to see that the patient does not roll from the bed, as there is often not a moment in which she is not tossing from side to side. In addition to this, labor is apt to supervene if the patient is approaching term. In fact the suppression of respiration during the convulsions surcharges the blood with carbonic-acid gas. Such a condition of the blood

usually stimulates the uterus to contract; therefore, the chances are in favor of the prompt occurrence of labor in eclampsia. Thus, in the stage of unconsciousness, the restlessness may be due to labor pain.

Dilatation of the Veins.—In women whose tissues are lax the veins of the lower extremities may have lost their elasticity, and the pressure of the enlarged womb may retard the upward flow of blood. The effect of this stoppage is seen in distention of the veins of the vulva, the inside of the thighs, and in those at the back of the knees. These veins become swollen and tortuous. The condition is marked by dragging, burning pain. Varicosities are seen most frequently in multiparous women and in women who have to stand continuously. There is usually no danger of rupture, as the superficial veins are situated in tissue that is elastic. There is, however, an exception to this, namely, when the varicosity occurs in veins lining the vagina, although the danger of rupture here does not usually occur until labor.

The treatment is clear; constipation should be avoided, for it is a cardinal rule that all patients suffering from congestion of the pelvic veins, or those leading into them, should be free from constipation. Rest, alcohol rubbing at night, the stroking being upward, in the course of the venous circulation. In severe cases bandaging from the instep up above the knee, or well on to the thigh, will meet the requirements.

Hemorrhage.—Bleeding from the vagina in pregnancy arises either from the uterine cavity or from the vagina itself. Hemorrhage within the abdominal cavity may also occur. Hemorrhage into the uterus may not always find its way outward through the vagina, but the blood may remain within the uterine cavity. This is called concealed hemorrhage.

The blood which makes its appearance in uterine hemorrhage arises from one of three causes—First, it may come from the separation of the placenta when the latter is attached to the uterine wall in an improper location. This is called Placenta Previa. Second, the bleeding may come from the detachment of the ovum in a beginning abortion, or as the first symptom of miscarriage. Third, it may be one of the symptoms of ectopic gestation, a condition in which the ovum has been impregnated while in the Fallopian tube.

We should likewise remember that recurring bleeding may be seen at periods corresponding to the monthly flow. Again, a ruptured varicose vein in the vaginal wall may be the origin of bleeding.

Concealed hemorrhage is due to an accidental separation of the placenta.

The description of these different conditions will be taken up later. For the present it is best to study the signs of hemorrhage and the treatment.

External hemorrhage, that is, bleeding from the vagina, is always apparent, although there may be free bleeding without any but the mere staining of blood on the pad or dressing, owing to the accumulation of clots in the vagina. It should be noted that a sudden gush of blood, although alarming, may not deplete the system so much as the constant oozing, which steadily weakens the patient without giving striking evidence of a great loss of blood.

For the detection of internal bleeding we must rely upon the symptoms which the patient is conscious of, and upon the signs of bleeding in general.

First, as to the symptoms: The patient complains of great weakness. The point at which bleeding occurs determines whether or not she has pain. Should the bleeding be due to a rupture of

the Fallopian tube in ectopic gestation, the pain is sudden and intense, so that the patient may sink to the floor in a faint. She complains also of blindness and shortness of breath. The loss of blood often causes a certain dulness in mental action, so that the patient seems almost indifferent to her condition. Thirst is often present.

As to the signs: The pulse is frequent, weak, and thready, the extremities cold, and the lips and face blanched. The temperature is apt to be subnormal and the surface of the body is bathed in a cold sweat.

What should the nurse do in the presence of such symptoms? A patient suffering from moderate bleeding should be watched carefully, as a sudden increase in hemorrhage might occur at any moment. A napkin or gauze pad should be applied to the vulva. This should be inspected and changed as often as necessary. This will serve as a means of estimating the amount of flow; otherwise it would be impossible to calculate how much blood is lost, especially where it is lost by steady oozing. The napkins, when removed, should be carefully folded so as to cover the stain, and wrapped in a towel or covered in a basin, to be inspected by the physician when he calls. As far as possible, they should be kept out of sight of the patient, and the nurse should be especially careful in changing or inspecting the napkins not to make any comment on the amount of blood lost. The color of the stain, the amount of blood, the presence or absence of clots, and the odor should be noted.

In serious hemorrhage, such, for instance, as occurs in placenta previa, the patient should be made to lie with the head lowered and the foot of the bed elevated. Ice should be applied over the uterus and the patient stimulated by a hot salt water enema, from 2 to 4 quarts. It is unnecessary to take time to sterilize the salt; the

solution should be prepared by using water at a temperature of 110°. This temperature will be reduced by the passage of the water through the tube and nozzle of the syringe. In the hospital, in addition to this, hypodermoclysis (the transfusion into the circulation of warm saline solution) should be given. The danger of abscess at the point of injection is to be considered, and the procedure should be carried out with as great care as other surgical procedures. The glass funnel, cannula, trocar, and rubber tubing should all be sterilized.

Physiologic salt solution is prepared as follows: 1 dr. of salt is added to 1 pint of sterile water. The actual proportion is 46 grs. to 1 pint. It is then filtered into glass flasks through a double layer of sterile gauze with cotton between. The flasks are stoppered with sterile cotton and placed in the sterilizer for twenty minutes with the steam at 240°. When the equipment does not offer space for the sterilization of a number of flasks, a screw-top bottle or Mason jar containing the salt and teaspoon for measuring may be placed in the autoclave and sterilized for three successive days, a half hour each day. The salt may then be added to sterile water to make the solution.

In private work, when time permits, the salt solution may be mixed and boiled in a sterile Mason jar. Two quarts should be prepared for injection under the skin. When a larger quantity is used, as for rectal injection, the salt may be subjected to dry heat in the oven in a covered plate, and added to sterile water in a pitcher which has been previously sterilized. Household sterilization of water is carried out as follows: The water should be filtered. It should then be placed, together with a new tin dipper, in a covered boiler large enough to boil at least 1 gallon, and brought to the

boiling-point. In fifteen minutes from the time at which the water begins to boil the vessel should be removed from the fire and the water poured by the dipper into quart bottles, previously sterilized, which are corked with fresh corks covered with gauze. These are set aside after being labeled "Sterile Water." If the water is for immediate use, it may be placed in sterile pitchers, the open tops of which are covered either with gauze or a sterile towel wrapped about the neck.

In injecting salt solution the lax tissue underlying the breast is usually selected. The absorption of the fluid is readily accomplished and, the tissue being free from muscle, is dilatable enough to accommodate a comparatively large amount of fluid. By the tissue underlying the breast, is meant that at the base of the breast, beneath the glandular area. The point where the needle is introduced is in the outer and lower portion of the convexity of the breast, near the chest wall. The amount of fluid varies from 12 ounces to 1 quart, depending upon the necessities of the case, and upon the rapidity with which the fluid is absorbed. If the patient is severely shocked and the pressure from the irrigating jar or funnel is sufficient to force a fair quantity into the tissue, the injection may be continued until the whole breast becomes tensely distended. The skin should be scrubbed in advance with tincture of green soap and wiped with alcohol.

The cannula should be plunged into the breast through the skin, which is held in a fold between the thumb and fingers. The puncture should be made vertically through the skin, not slanting. The solution should be flowing through the cannula at the time of puncture, in order to exclude air. The temperature of the water should be 103°. The height of the irrigating can should be from 3 to 4 feet above the point of injection. Some-

times both breasts may have to be filled. After the cannula is withdrawn, the point of injection should be washed with alcohol and then dusted with boric acid and covered with a light gauze dressing held in place by an adhesive strip. A light binder should

FIG. 29.—Method of administering salt solution by hypodermoclysis.

support the breasts. In some cases the space between the ribs and hip bone is selected as the point of injection. The breast, however, is preferable. In cases of extreme shock, transfusion, that is, the injection of the solution directly into a vein is resorted to. The physician undertakes this. The points, however, to be observed are: first, the exposure of the vein by incision; second, the injection in a direction corresponding to the current of blood in the vein, that is, toward the heart; and, thirdly, the avoidance of admitting air into the vein.

It can be understood that the nurse is powerless to carry out the technic of hypodermoclysis unas-

sisted, and that most instances of sudden hemorrhage in private practice occur without preparation to meet the emergency. The treatment in such cases resolves itself into the treatment of shock. Besides the measures mentioned on p. 76, the extremities should be kept warm by hot-water bags and bottles. Stimulating hypodermic injections of strychnin, $\frac{1}{30}$ gr., or morphin, $\frac{1}{8}$ gr., or both, if it is a question of the patient's actually surviving the delay of the doctor's arrival, should be resorted to. Drafts of cool water to aid in supplying the deficient fluid in the body should be given. A pint of warm normal salt solution should be injected by enema every third hour. This should be allowed to flow very gradually, the nurse controlling the flow by a hemostat slightly compressing the tube, to shut off its caliber. Absolute quiet and system in managing the surroundings of the patient are essential. Whiskey, $\frac{1}{2}$ oz., diluted, may be given to revive the patient. Whiskey is, however, stimulating to the circulation, and may increase hemorrhage if repeated frequently. Always remember to inspect the pad and dressings, in order to approximately estimate the amount of blood lost.

Death of the Fetus.—As a result of acute illness or constitutional disease, the nutrition of the fetus may be interfered with, resulting in the death of the latter. The woman may notice this by the absence of fetal movement. Should she complain repeatedly of absence of fetal movements, the chances are that the fetus is dead. In addition, there are to be observed, in their order, the following changes: decrease in abdominal swelling, nausea, headache, depression. If the uterus tends to expel the dead fetus, pain and bloody discharge will ensue. In many instances the patient will not be aware of the death of the fetus. She may thus carry it for months. As long as the amniotic sac is intact there is no special danger,

but putrefaction of the fetus and its attachments will be taking place and septic absorption may occur as a result. When there are no symptoms of fetal death, the most painstaking observation of the patient will be required in order to determine the condition. Probably the most unerring test is that of measuring the circumference of the abdomen at regular intervals, perhaps once a week. In this way the decrease in the size of the uterus may be detected.

THE SURGICAL COMPLICATIONS OF PREGNANCY

Appendicitis.—This may occur at any time in pregnancy. The appendix is situated low down in the abdominal cavity, toward the right side, in what is called the iliac region. Pain at this point may be due to other causes, such as pressure on the ureter—the tract leading from the kidney to the bladder—to stretching of the ligaments of the uterus, or to intestinal trouble. Therefore, moderate pain and soreness at this point should be carefully investigated before concluding that the patient has appendicitis. Most women are apt to become panicky at the presence of pain in this region, and the nurse should know enough about the causes of pain, other than appendicitis, to reassure her patient. Severe pain, fever, and vomiting are alarming symptoms, and no time should be wasted in sending for the physician.

If operation is indicated the case becomes a hospital case, and the nurse is then to be guided by the surgical requirements.

Ectopic Gestation.—The symptoms of ectopic gestation, with the exception, perhaps, of slight bleeding, do not appear until the growing ovum breaks through the Fallopian tube. This occurs usually in the third month. When this rupture occurs the symptoms are so striking that the patient herself is conscious of an abnormal change in her condition. She should not be encouraged to conceal

her symptoms, as the case at once becomes a surgical one.

The pain is usually accompanied with faintness. It is felt distinctively in one region, namely, on the side corresponding to the rupture. External hemorrhage, usually moderate in degree, occurs. Mixed with the blood are shred-like particles of membrane. This is the decidua, which has formed in the uterus. The internal bleeding is revealed by the condition of shock. The patient should be cared for in the same manner as one suffering from shock and hemorrhage.

A less evident form of ectopic or extra-uterine pregnancy is that in which the fetus continues to grow outside of the womb, after rupture of the tube. Pain and one-sided swelling in the abdomen are the symptoms; although the condition would not be likely to be classed with the usual form of

FIG. 30.—The seat of ectopic gestation.

ectopic gestation, as there may probably have been no evidence of rupture, and the enlargement of the abdomen would have progressed without marked symptoms.

Fibroid Tumor and Cancer of the Uterus.—In discussing these conditions, we may omit the larger growths situated low down in the wall of the uterus, as they offer such a serious obstruction to the expulsion of the child as to place them in the list of af-

fections requiring surgical treatment. The smaller fibroid growths, however, in the uterine wall may come under the nurse's observation in this way, that they very frequently increase in size as pregnancy advances and cause the patient pain. Therefore, when an irregular enlargement, apparently attached to the uterus, makes its appearance and the patient is increasingly annoyed by pain, she is in need of her physician's advice and should be encouraged to undergo examination. As far as the nurse is concerned, the form of cancer affecting the cervix is that which has a bearing in her care of the case. Cancer in this region gives rise to three symptoms: bleeding, a foul, yellowish discharge, pain. Where these symptoms appear, the likelihood of cancer may be entertained, and the physician should be consulted before the patient proceeds any further in pregnancy.

VENEREAL DISEASES

The venereal diseases are gonorrhea and syphilis. They both have a serious import in pregnancy—gonorrhea, for the reason, first, that the vaginal discharge which occurs affects the infant's eyes at birth, leading eventually, in some instances, to blindness; second, in that it may occasion a form of infection in the lying-in period causing a serious complication—syphilis, for the reason that it is communicated to the child during the latter's existence within the uterus.

Gonorrhea.—Gonorrhea is a local infection attacking the mucous membrane of the vagina, cervical canal, and urethra, due to a germ called the gonococcus. It is the result of unclean intercourse. The discharge is apt to produce a spread of the infection if carried to other mucous surfaces, especially the eyes. It does not affect the general system as does syphilis. The symptoms which usually accompany this condition in preg-

nancy are the painful passage of urine and a frequent desire to urinate. There is present also a purulent discharge from the vagina, and occasionally an inflammatory swelling in one or the other of the labia at the entrance of the vagina.

Inflammation of the eyes, due to gonorrhea, is spoken of as conjunctivitis (an inflammation of the mucous membrane lining the lid and covering the surface of the eyeball—the conjunctiva) or ophthalmia (a general term for inflammation of the eye). Owing to the possibility of the infection being carried to the eyes the patient should receive special care at the hands of the nurse. The recognition of the discharge is important. It differs from simple leukorrhea, first, in its persistency; from the beginning of the gonorrheal infection the discharge is free and continues to the end of pregnancy. Secondly, it presents a peculiar character; it is greenish, thick, and irritating. In the third place, it is associated with pain in voiding urine. This is the result of the extension to the urethra of the gonorrheal inflammation.

The nurse should be apprised of the possible occurrence of an abscess of the gland situated at the entrance of the vagina on one side or the other—the vulvovaginal gland. This occurs in gonorrhea and may cause the patient a great deal of suffering (Fig. 31). The formation of pus usually cannot be averted, and continues until the abscess sac becomes greatly distended and the skin inflamed. As a free opening and obliteration of the sac is necessary for a cure the patient should not be allowed to wait for the abscess to rupture, but should be carefully watched until the time for operation has arrived.

As far as the nurse's efforts in the treatment of abscess go, rest is the most important thing. The woman should be kept upon her back. Fomen-

tations (hot moist applications) should be used, either of witch-hazel and laudanum or of boric acid. The bowels should be kept freely moved. Douching is too painful to be of service. Poulticing, unless advised by the physician, should not be resorted to, although it usually gives relief to the tension. The milder abscesses, which form and rupture quickly, are apt to recur, and the nurse should not encourage the patient to withhold the knowledge of her trouble from the physician.

A patient in private practice suffering from gonorrhea should be carefully douched in accordance with the physician's directions. The irritability of the bladder accompanying gonorrhea should receive attention; that is, the patient should be

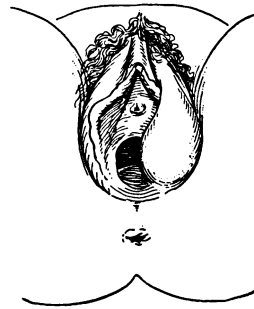

FIG. 31.—Abscess of the vulvovaginal gland in gonorrhea.

given fluids in abundance to increase the flow of urine, and her diet should be regulated, with the object of lessening the irritating condition of the urine.

The possibility of a gonorrheal abscess of the vulva should be expected, and any swelling on one or the other labium should be reported at once. In hospital practice the patient should be sent to the dispensary for regular weekly examination and

she should be kept isolated from the other waiting women, in so far as the use of a separate douche-pan and irrigating apparatus is concerned. She should be warned to protect her eyes from the contamination of the discharge, which might be conveyed by the fingers.

Syphilis.—Although the class of cases in which syphilis occurs is usually to be met with in hospitals, nevertheless the disease is frequent enough to make it necessary to caution the nurse against the danger of contact. The disease, in either its primary or secondary stage, may complicate pregnancy. If in the first, the early lesion, in the form of an ulcer situated in the genitalia (the vulval region or the surface immediately surrounding it), offers the risk of infection to the nurse while bathing the patient or giving the douche. A crack in the skin of the hand may be the point of absorption of the virus. In the secondary stage, or stage of eruption, the danger lies not so much in contact with the skin as in the spread of the virus from the sores on the inner surface of the patient's mouth, the so-called mucous patches. Contact with china or drinking utensils may here be the means of contagion. Similar sores, spoken of as condylomata, appear about the anus and vulva, so that here also in caring for the patient the nurse is subjected to risk.

Mercury is the drug used in the treatment of syphilis. The nurse should, therefore, keep her attention on the condition of the patient's gums. Salivation, which comes either from excessive doses of mercury or from a sensitiveness in some instances to its action, is dangerous in those women who may suffer from the peculiar tendency to gangrenous inflammation of the gums occurring in pregnancy. Cleansing mouth washes and the scrupulous care of the teeth are essential.

Probably the most important consideration is the

liability to premature labor which syphilis brings about. In a syphilitic patient the early signs of miscarriage—pain, bleeding, the discharge of amniotic fluid—point with more positiveness to miscarriage than do the same symptoms in other women.

The patient should be encouraged, if aware of her condition, to carry out the physician's treatment faithfully, as the future of her child depends upon it. On account of the tendency to miscarriage the patient should be cautioned to avoid anything which would invite this.

Medical Diseases.—The medical diseases occurring at this time may be serious enough to interrupt pregnancy. Typhoid fever, pneumonia, and grippe may cause miscarriage through the high temperature and exhaustion which are present.

Heart Disease.—Heart disease may cause trouble either early in pregnancy from the tendency toward abortion, or, as pregnancy advances, through pressure upon the heart and lungs, resulting in embarrassment to the circulation. It will be seen, therefore, that the possibilities are grave and that a patient suffering from heart disease should receive the greatest care.

The kidneys, the bowels, and the skin should perform their functions as perfectly as possible. The patient's food should be carefully chosen. She should be spared unnecessary exertion, and the signs of imperfect circulation through weakening of the heart's action should be looked for. These signs are increased difficulty in breathing and edema or swelling of the lower extremities. In cases of sudden weakening of the heart, cyanosis (bluish discoloration of the skin from stagnation of the blood current), oppressed breathing, and collapse would appear. If, in combination with these signs, a rapid, weak pulse develops, the case is serious and needs the physician's immediate

care. Cases which end in abortion do not bear ether, although it is to be noted that ether, when inhaled in small quantities, is at first stimulating to the heart. The anguish and oppression of advanced cases may be relieved by small quantities given in this way. There is, however, a great difference between the small dose, which is stimulating in its effect, and larger doses, such as are given to induce unconsciousness.

Tuberculosis.—The nurse should be alive to the complications occurring in the course of the disease. They are:

First, cough: This may be exhausting, but the danger of the interruption of pregnancy from excessive coughing is not great. It can be readily understood that the expectoration in consumption is especially undesirable in the confinement room, and the nurse should see that the patient uses the spit-cup faithfully.

Second, difficult breathing: In advanced cases toward the end of pregnancy this is an extreme symptom. It may so exhaust the patient as to make it advisable for the physician to terminate labor. In attacks of dyspnea the nurse should see that the patient is properly supported in bed to relieve her distress, and that she is supplied with fresh air. In milder cases a patient suffering from difficult breathing should be saved the exhaustion which comes from the attempt to walk or climb stairs.

Third, fever: This is probably the most exhausting symptom and the symptom which is most likely to affect the fetus. A careful record of the temperature, especially that of the evening, should be kept.

Fourth, blood spitting: Free hemorrhage from the lungs in consumption is the only sudden occurrence likely to terminate the life of the fetus through the fatal effect upon the mother. In advanced

cases it stands as a great danger. Medical aid should be called at the first appearance of hemorrhage, in order that the child's life may be saved, even though that of the mother cannot be.

Eruptive Diseases.—The eruptive diseases, scarlet fever, small-pox, and measles, require unusual management; first, in order to prevent the spread of the disease to others, and second, on account of the possibility, in small-pox especially, of the infection being carried to the fetus. For this reason vaccination should be carried out where the mother has been exposed.

CHAPTER X

THE APPROACH OF LABOR

WE have before spoken of the importance of lightening as pointing to the end of pregnancy, so that we may now consider the changes which occur after this, as indicating the approach of labor. Generally speaking, they are those which are due to pressure from the descent of the child. The woman is conscious of a sensation of weight. Accompanying this is a sense of pressure on the rectum or lower bowel, giving rise to a desire to empty the bowel. In fact, diarrhea may be present just as labor is about to begin. The bladder also becomes irritable from pressure. The effects of pressure are also shown in the obstruction of the veins in the lower portion of the vagina. This causes a swollen condition with knotty dilatation of the veins. Nature provides additional mucous secretion. This is obviously for the purpose of reducing resistance in the expulsion of the child through the birth canal, and to protect the mucous membrane of the vagina from the invasion of septic material. This moisture is in the form of a thin secretion which is spoken of as leukorrhea. Although the presenting part of the child exerts a downward pressure, the bulk of its weight is removed from the lower abdomen and the woman feels a sense of relief. This condition of comfort, which probably comes from the freer action of those organs which are hampered by pressure—the lungs, kidneys, and intestines—is especially marked during the last few days of pregnancy, and is suggestive of the approach of labor.

It is not unusual for women to complain of an increase in the active movements of the fetus during the time between lightening and the beginning of labor.

Many women toward the end of pregnancy are annoyed by occasionally recurring pains in the lower abdomen, together with some slight discomfort in the back. These pains occur at night and the patient is usually free from them during the waking part of the day. They may be noticed for a night or two in succession and then disappear. In other instances they may be of nightly occurrence until labor begins. They are spoken of as false pains.

The abruptness with which labor comes on varies under different circumstances. The ability to recognize the first indications is born of experience. Roughly speaking, pain is the first symptom. In a primipara this may be misinterpreted; that is, the woman may look upon her pain, for instance, as occurring from another cause. In a woman who has not had the experience of passing through labor, if the pain is of griping nature, it may be mistaken for intestinal colic. In multiparæ it is recognized at once; the decision as to what the pains mean is made promptly and the patient adapts herself to the situation. In some instances it may be left to the nurse to decide. Here the facts are determined: first, by the character of the pain, which has a tendency to settle in the lower portion of the back, extending toward the hips and lower abdomen; second, by the recurrence of the pain; should it return at more or less frequent intervals with slightly increasing severity, no doubt as to the approach of labor may be entertained.

Sometimes, in multiparæ, before the actual onset of labor a bearing-down sensation with pressure on the bladder and rectum is apt to come. The patient may be inclined to think that this is the

beginning of labor. If it is accompanied with leukorrhea and recurring pains in the back it is significant. In the majority of cases, however, it will be found that the pressure will be relieved by rest. In other words, the natural relaxation of the abdominal muscles, present in multiparous women, allows the presenting part of the child to descend into the pelvis; but this may not necessarily mean that either the time of labor has arrived or that the dilatation of the mouth of the womb, which is the actual beginning of labor, has taken place. In primiparous women the actual pain, referred to the back or abdomen, is always the first sign of labor. The tendency to marked downward pressure in the beginning of labor is not felt with the first child.

The cause of pain in labor is the contraction of the uterus; it is this which induces labor. At the end of pregnancy the uterus is excited to contract and with each contraction the pain occurs. Not only does the uterus contract, but the mouth of the womb (the os) dilates, to prepare the way for the expulsion of the fetus. In fact, it is this which marks the difference between the painless uterine contractions of pregnancy, spoken of above as the Braxton Hicks sign, and the contractions of labor. In the first instance the question of dilatation does not exist, while in the second, the expansibility of the mouth of the womb goes hand in hand with the contractions.

As the lower portion of the uterus expands, it separates from the amniotic sac in which the fetus is contained and drags upon the strands of the decidual lining of the womb which are attached to the sac. The minute blood-vessels of these strands are ruptured and the pinkish show occurs. In a normal labor the amniotic fluid is not discharged at this time, but remains in the amniotic sac to be forced forward in advance of the presenting part

of the child to serve as a dilating wedge for the mouth of the womb.

In some instances the methodical course of events fails. The pains may become active from the beginning. In such instances, the child's head descends rapidly, and with a sudden discharge of the amniotic fluid, the child is born. This is called precipitate labor. It is more likely to occur in multiparous than in primiparous women. On the other hand, in certain instances, the pains, which may have been more or less pronounced, may cease. This may occur even with marked dilatation. Thus, the further course of labor may be postponed. A slowly progressing labor may come from early rupture of the amniotic sac. In such instances the rupture has probably been accidental, and has occurred before the proper conditions for the beginning of labor have arisen. The absence of the dilating force of the amniotic sac will make what little pain which may be present of no effect, and, even in the presence of recurring contractions, the labor may be delayed. Dry labor is that which is accompanied by a scanty discharge of the amniotic fluid.

The first indication of actual labor is shown by one of three signs, or by the combination of two, or all of them. They are: first, steadily recurring pain; second, the discharge of amniotic fluid, mentioned above; third, the pinkish discharge or show. It is well to call attention to the fact that the amniotic fluid may be discharged in small quantities. This is called leakage. The greenish or almost colorless appearance of the fluid will distinguish it from urine, for which it may sometimes be mistaken.

CHAPTER XI

THE PROGRESS OF LABOR

LABOR is divided into three stages: the first, from the accession of pain to the final dilatation of the os; the second, from complete dilatation to the expulsion of the child; the third, from the birth of the child to the delivery of the placenta.

In the first stage the indefinite pains which marked the beginning of labor are now replaced by regular pains. The patient waits for the return of her pains and adapts herself instinctively to bear them. Her mental attitude is at first cheerful, but with the suspense, which comes from what she looks upon as delay, she becomes anxious. She is disinclined to food as her labor progresses and nausea comes on. She finally seeks the bed and yields to the instinct to husband her strength for the accomplishment of her delivery. As the pains increase in severity the patient's countenance becomes swollen and the skin moist. Her nervous condition is that of exhaustion, and the peevishness that comes from pain finally gives place to groaning.

The pain at this time is located in the back and hips, extending forward. It is of a grinding nature. The pain usually recurs every five or six minutes and lasts for a minute, or a fraction over. In some instances it is almost constant. In others, a slight twinge may occur, followed immediately by a severe pain. The pain begins gradually, becoming more and more severe until it reaches its height, and then subsides. If the patient is composed and has already passed through the experience of labor she may be able to rest between her pains. If, on the other hand, the pain is frequent the only suggestion

of relief comes with dozing, from exhaustion in the intervals between pains. The period of complete dilatation of the mouth of the womb is that in which the pains are most severe. It is even possible to estimate the progress of labor by the increased severity of the pains as this point is approached.

As the patient enters the second stage of labor the character of the pain changes. Instead of giving way to her anguish the patient holds her breath, with the instinctive tendency to bear down, and gives expression to her pain by groaning as the pain passes away. Her mental attitude also changes. She feels that the pains are productive, and that she has reached a stage in her labor where she can help herself. It is even possible for the patient to get rest between the pains. As the presenting part of the child descends and begins to dilate the vulva, the pains become again more severe, just as when the head passes through the fully dilated cervix, at the end of the first stage of labor. The irresistible tendency to bear down, however, counteracts to a certain degree the severity of the pain, and the patient cannot be prevailed upon to restrain herself as the child is born.

The third stage of labor is practically painless, with the exception of slight bearing-down contractions. Finally, the placenta is expelled with one of these contractions, and the labor is complete.

While the contractions of the uterus are preparing the way for the expulsion of the child, the latter is undergoing certain changes in its position in the pelvis. In the early stage in labor the head, for instance, dips into the inlet. This is spoken of as engagement. The child's chin becomes forced against the chest, in order to allow the posterior portion of the head to point downward. This is spoken of as flexion, as described above. Descent of the head now occurs. As the head becomes pressed against the perineum the flexion is over-

come and the chin is driven away from the chest. This is spoken of as extension. Finally, after the head is expelled it rotates outside of the vulva into the position it originally occupied. This is called external rotation, in contradistinction to the opposite turn given to the head in its descent.

As the head is expelled, it stretches the perineum forward and draws the rectum downward. This causes the expulsion of fecal matter with each pain. The tension upon the perineum becomes so great that it finally causes the perineum to tear at the edge of the vulva. This is called rupture of the perineum. It is of such common occurrence, especially in primiparous women, that it may be included in the description of the progress of normal labor.

The duration of the stages of labor varies in accordance with the difficulties of the case, but the duration of the first stage in primiparous women is from twelve to twenty hours. That of the second stage is from two to six hours. The third stage lasts from fifteen minutes to three-quarters of an hour, provided it is terminated without assistance. In multiparous women the first and second stages are comparatively short, the whole labor occupying less time than the first stage in primiparous women.

At the time when the os is fully dilated, that portion of the amniotic sac which is in advance of the head ruptures, and the amniotic fluid escapes with a sudden gush. This is spoken of as rupture of the membranes.

CHAPTER XII

THE NURSE'S MANAGEMENT OF LABOR

SHOULD the nurse arrive as labor comes on, it will be her duty to familiarize herself with her surroundings; that is, with the patient's condition and the degree of preparation for the labor. If she has already been with her patient she will be familiar with the latter. If the nurse be summoned hurriedly she should be prepared to enter her duties with despatch. Tardiness in arriving and in changing into her uniform is most exasperating to the physician, who may find himself in urgent circumstances with the case. Should the nurse be on hand before the physician, her first care should be to determine whether or not labor has actually begun. She should study the character of the pains to decide this, being careful, at the same time, to show no anxiety nor to scrutinize the patient too carefully. If she has concluded that the patient is actually in labor she should send for the physician. If she telephones to him, she should be prepared to answer his inquiries as to the condition—whether the pains are true labor pains, whether there is a show, leakage of the amniotic fluid, and what the patient's general condition is—at the same time inquiring what special directions he may have to give.

After sending for the physician the nurse will avail herself of the opportunity to prepare her patient. The latter is to be given an enema of soapsuds, the evacuation to be carried out while the patient is in the sitting posture in the bath-room if her pains have not advanced too rapidly, rather than on the bed-pan, in order that the lower bowel

may be thoroughly emptied. This should be a routine procedure, unless the patient has had frequent movements. Even under the latter circumstances, an enema will make her feel comfortable and will relieve the bearing-down sensation from which she is likely to suffer. She is then bathed in the tub at a comfortably warm temperature. It may be necessary to give her a sponge bath, but the tub is better. Her hair should be combed and neatly plaited in two braids. If the patient be a hospital patient, the scalp should be carefully looked to and in case of vermin the hair should be washed in a carbolic solution, 1 to 40. The hair is done up lightly and wrapped in a towel moistened in this solution, the pillow being protected, in the meanwhile, with a mackintosh covering. The nails should be manicured, should the patient be a woman in whom such care is necessary. In private practice it is not necessary to shave the labia, and, indeed, the thorough cleansing of the genital region should be left until the patient has advanced in the first stage of labor, when her fears will be less likely to be excited by carrying this out. When it becomes necessary, a thorough sponging, by means of sterile gauze wipes moistened with green soap solution should be given. If the length of the vulval hair suggests trimming with scissors, this may be done, otherwise it may be left to the physician's direction. After the cleansing it is better not to use a vulval pad. It is difficult to keep a pad properly applied, especially if the patient is restless, and, if the pad becomes dislodged, it is apt to come in contact with some part of the patient's surrounding less clean than the genital region. Constant inspection and frequent cleansing of discharges will do away with the necessity of a vulval pad.

The nurse should make herself familiar with the arrangements of the household; the proximity of the patient's room to the kitchen, the location of the

bath-room and the hot-water supply. If she can press into her service an intelligent maid to be ready to wait outside of the delivery room, she will be much less distracted in her work. After the patient is well advanced in labor she should not be allowed to use the sitting posture in defecation or in voiding urine. It will sometimes require unceasing effort to impress this upon her, as the need for emptying the bladder will be more or less urgent. When the patient is made comfortable, dressed in a clean nightgown, with a light wrapper and bedroom slippers, she may be advised to keep on her feet, while saving herself any undue exertion. Meanwhile the nurse proceeds to arrange the room and make the bed. The light should be arranged so that it can be turned full upon the bed when necessary, and the temperature of the room made comfortable. The bed must be made with two protecting surfaces; one on which the patient is delivered; the other on which she is to lie after confinement. As far as it may be possible, a firm, unyielding mattress should be secured. The bed should be of three-quarter width and not too low. It should be moved well away from the wall and be accessible from both sides. Casters which are not too freely movable are an advantage. The mattress is to be covered with rubber sheeting 1½ yards in width and long enough to be pinned securely to the mattress at each side of the bed. Over this a sheet is spread and pinned. Finally, a pad of nursery cloth is pinned over the sheet. This constitutes the make-up of the bed for the puerperium or lying-in period. A rubber sheet is spread on top of this and in turn covered by a sterile sheet. The pad which is next to the patient should be new, and should have been sterilized. It may be narrower than the under pad (1 yard square is sufficient). It should be securely fastened. Obstetric pads for the bed made of layers

of cheese-cloth, holding cotton padding between and tufted, are sometimes used. Nursery cloth is better. Paper pads are unsafe.

Some of the manufacturing houses make a pad of absorbent cotton underlaid with cotton batting, the layers covered with gauze and quilted. This is a very thorough protection. It is furnished in sterile form.

The nurse should have the abdominal binder, a change of night-clothes and stockings, fresh pads for the bed, sterile sheets, and extra towels put away in a convenient drawer. At the foot of the bed a table of fair size should be spread with a sterile towel. On it should be arranged the supplies that are immediately needed—ether, a roll of gauze and absorbent cotton, each wrapped in a sterile towel, a bundle of gauze wipes, at least three dozen, a bundle of sterile cotton pledgets, vaselin, sterile scissors, the ligating material for the cord, in the form of either sterile bobbin in a bowl of saturated boric-acid solution, or sterile silk in a sealed tube, a boric-acid solution in a covered bowl for the baby's eyes, a bottle of lysol or synol, a half dozen sterile towels, green soap, a measuring glass, tumbler and drinking water, together with the fluidextract of ergot which has been previously ordered; whiskey should be convenient; a teaspoon and hypodermic apparatus should also be available. A china waste jar and either a china or enameled bed-pan should be ready. The bed-pan should be placed out of sight, but near the bed. It should be covered by a sterile towel.

It is very important that every provision should be made for douching. After the patient is well advanced in the second stage of labor, boiling water should be in readiness in case it is necessary to give a hot douche. The nurse should also select a clothes-rack or some point of suspension near the bed to which the douche-bag, covered with

a sterile towel, may be hung, in case she should have to be employed in assisting the doctor and, therefore, not be able to hold the bag. If a douche-pan has been provided it should be ready for use. As to a Kelly pad, the writer prefers to deliver the patient with the bed thoroughly protected by a pad covered with a towel rung out of bichlorid solution.

On the physician's arrival it may be in order for him to examine the patient. The latter may be placed either on her back or side. The dorsal position, with the patient across the bed, is better if the examination is required to determine with exactness the indications for operation. Ordinarily, however, the patient need not be subjected to such thorough examination. If she lies on her back the knees are to be drawn up, the legs separated, and each covered by a sterile sheet. This will give the physician full opportunity to make a visual examination without unduly exposing the patient. It is always fitting that the patient should wear stockings during the labor. It is less exposing. An extra pair should be on hand in case it is necessary to resort to instrumental delivery to terminate labor. This pair should have been subjected to dry sterilization. In hospital practice, draw-slips to cover the legs and feet are provided. If the patient lies on her side the knees should be well drawn up and she should be covered by two sheets, each of which is folded once, the upper covering her body and extending to below the hips, the latter covering her legs and feet. The examination can be conducted by simply raising the corner of the upper sheet.

It is customary for the physician to use rubber gloves, both for early examination and in the conduct of labor. The gloves should be thoroughly scrubbed with green soap solution. They should then be folded in gauze and boiled in a covered enameled basin. Between the periods when they are

used they may be left immersed in bichlorid solution, but if the labor is prolonged they should occasionally be reboiled. If the physician prefers to put them on dry, talcum powder may be sterilized by heat and used as a dusting powder to facilitate drawing them on. The powder should be kept in the glass tube in which it has been sterilized, properly protected by a cotton stopper. Otherwise, sterile water or glycerin may be used to distend the gloves when they are being applied. After use they should be promptly taken charge of and scrubbed and immersed, preparatory to future use.

The advantage of rubber gloves is far outdone by the risk in their use if the nurse should neglect these precautions. Sometimes the nurse is pressed for opportunity to do all that is expected of her. If, however, she should be careless in this she might be directly responsible for the infection of the patient.

A commode in the room may be of convenience to the patient, but its presence is apt to tempt the patient to use it in the later stage of active labor, when it is not advisable for her to leave the bed.

The solution of bichlorid for disinfecting the hands may be placed upon the supply table. It is, however, usually preferable to have it on a separate table with sterile water, green soap, and hand-scrub. To thoroughly disinfect the hands a solution of permanganate of potash, 3 dr. to 2 quarts of water, should be used. The hands are then decolorized of the potash stain by immersing them in saturated solution of oxalic acid (crystals). They are then to be rinsed in sterile water. After this they are dipped in the bichlorid solution. If this process is used the basins had better be set in the bath-room, if there is space for them, as the display of basins is likely to be somewhat disturbing to the patient.

The receiver or blanket in which the baby is to be wrapped should be within reach. It is well also to have a double layer of gauze, cut to correspond with the receiver, as a lining for the latter for the purpose of absorbing the discharges which may cling to the baby. The articles for immediate use for the baby are as follows: sweet oil or albolene for anointing the skin, castile soap, dusting powder for the cord, a new eye-dropper, binder, two diapers, bathing blanket, underclothing, and slip. These articles should be placed together convenient for the nurse when she is ready to wash and dress the infant.

As the patient progresses in the first stage of labor, she becomes restless from the continuation of her pain. If she be a woman of nervous temperament, it is sometimes difficult to control her. The nurse should use great patience in suggesting to her the necessity of bearing her pains with fortitude; at the same time she must insist upon the patient not abandoning herself to her restlessness, as the contact with unclean surfaces would be likely to infect her. During the second stage of labor the patient should be told how to bear down. Sometimes the patient will select instinctively the method of bearing down which individually suits her. This may be by grasping the nurse's hand, by straining with her hands clasping the uprights at the head of the bed, or by pressing with her feet against a firm surface at the foot of the bed. Usually, however, the patient finds most help by pulling on a sheet, the end of which is fastened to the foot of the bed.

There is no question of ether being of great service in dulling the sense of pain at this stage; it removes the tendency to resist the pain and thus aids the natural force of expulsion. The physician may find it convenient to entrust the administration of ether to the nurse. The ether should be poured

from the can into an empty medicine bottle, which is stoppered by a cork from which a wedge-shaped piece has been cut lengthwise to facilitate dropping the ether. The ether, when in a bottle, is easily seen, and the amount used may be thus estimated. A piece of gauze six layers in thickness, partially saturated with ether by dropping it on, a few drops at a time, is held before the patient's nose. After

FIG. 32.—Method of administering chloroform.

she becomes accustomed to it, she will instinctively press it over her face to extract as much as possible from the gauze in inhaling it. In case she demands it with every pain the nurse must drop the ether sparingly, as otherwise the patient might inhale too much. It should be withheld between pains and given toward the end of each pain, after the patient has made what effort she is capable of. The pain thus passes quickly and the patient absorbs but little ether. If chloroform is used the patient should be watched very closely, as it is possible for her to pass almost directly into a state of unconsciousness or to become cyanotic from depression of the heart's action. In giving an anesthetic to dull the pain the patient should not show more than the slight flushing of the countenance which signalizes its early effect. Some patients

find no comfort in it; others are wildly excited by it. In either case it should not be continued. Chloroform should be held at least 2 inches from the nose to admit of the mixture of air. The pulse should be frequently examined.

As labor reaches its completion, the perineum becomes distended and the child's head makes its appearance at the vulva, causing first a slight separation of the labia, then a more distinct protru-

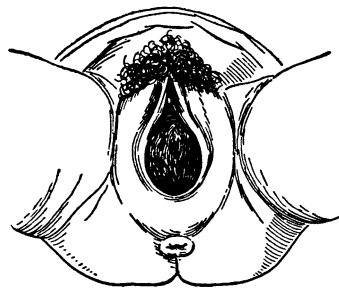

FIG. 33.—Distention of the vulva and appearance of the child's head after rupture of the membranes.

sion, the expulsion of the head being interrupted by periods of recession in the intervals between the pains (Fig. 33). Finally, a strong pain will carry the head through the vulva. During the distention of the perineum and dragging forward of the rectum, the nurse should have gauze wipes at hand, together with a warm bichlorid solution, in order that the vulva and perineum can be cleansed of the discharges. If the cleansing is left to the nurse she should be particular, first, always to carry out the motion of cleansing from the vulva backward, so as not to contaminate the region of the latter with fecal matter; second, she should be careful to discard the wipe after it has been used, even although it has but touched the part.

After the head is born the nurse should cleanse the child's face with a gauze wipe, being particular to avoid the use of bichlorid solution in her care of the baby at this time. She should cleanse the eyes, either by wiping them carefully, using a boric-acid solution, or by separating the lids and instilling from the eye-dropper the same solution into each eye. This takes but a moment, and if the nurse keeps her presence of mind it can be done with deliberation. Next the mouth is cleansed by a gauze wipe, the corner of which, wrapped about the nurse's finger, is introduced into the baby's mouth. With the next pain the shoulders are born, followed by the hips and feet. There may be a final gush of amniotic fluid, mixed with blood, which may spread over the bed and well up into the baby's mouth unless the discharge is taken care of. The nurse should, therefore, be ready with a folded sterile towel to place in front of the patient's buttocks in order to absorb the fluid. Another towel should be hastily spread over the baby, in order to protect it from chill and the surrounding moisture.

Either the nurse or the physician now reaches for the fundus of the uterus and compresses it slightly through the abdominal wall to stimulate contraction. Occasionally, circular massage of the fundus will further this. It is rather better not to go at it too vigorously, as the uterus by this means may be too actively stimulated and may thus contract forcibly upon the placenta. The nurse should report the sudden upward displacement of the fundus; this denotes the relaxation of the uterus and the accumulation of clots underlying the placenta. It is an indication for expressing the latter.

Before attending to the cord the eyes are more carefully treated, as a precaution against the conjunctivitis which may follow birth. The lids are separated by the nurse by pressing them open, using a

piece of gauze to give better purchase with the thumbs which are used to separate them, one thumb over each lid. The physician or the nurse's assistant washes each eye out with boric-acid solution, 15 gr. to the ounce, instilled by a pipet or dropper. Following this, 1 drop of a 2 per cent. solution of nitrate of silver is dropped into each eye. This is neutralized by a free injection of normal salt solution. These various solutions may be at hand, each with its individual pipet or dropper.

FIG. 34.—Outfit for the prophylactic treatment of infant's eyes.

In the meantime the tying of the umbilical cord may be taken up. The cord is usually tied by the physician, but the nurse may find herself alone in a case where it will be necessary for her to tie it. In the first place the child should be so placed between the patient's thighs as to relieve any tension on the cord. Next, the attachment of the cord to the child and that portion to be ligated should be cleansed with a bichlorid solution. The jelly of the cord at the point of ligation should be pressed away by compression with the nurse's thumb and first finger. The first ligature is to be placed about 1½ inches from the child's abdomen, the second ligature at a point 2 or 3 inches from the first, toward the placental end of the cord. The first ligature may be tied either in a double knot, with a single loop around the cord, or with

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a single knot, the ends being carried again around the cord and tied with a double knot on the side

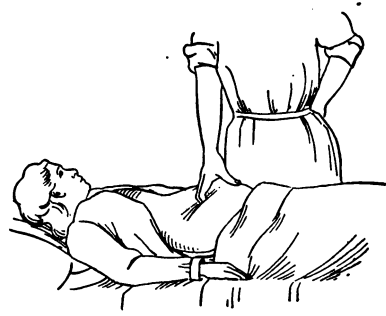

FIG. 35.—Palpation of the fundus.

opposite the first knot (Fig. 36). In tying the cord, if bobbin or tape is used, the ribbon-like flatness of the tape will prevent a tight knot if a surgeon's knot is used; that is, a double twining of the portion

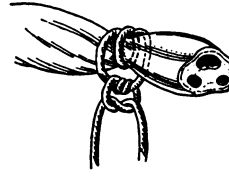

FIG. 36.—Diagram showing ligation of the cord.

which is first tied, rather than a single twining. For that reason the simple or square knot may be used. It is important, however, that the ends should be drawn as tightly as possible. The ends of the bobbin, after being tied, are cut 1 inch from the knot. The ligature toward the placental end of the cord may be tied tightly with a single knot. The ligature being moist will usually hold, especially as the ligation of this end of the cord is

of service only until after the placenta is expelled. A single exception to this holds in the case of twins, where this end of the cord must be tied securely with a double knot in order to prevent bleeding from the placenta, which may be common to both children. The cord is cut 1 inch from the first ligation. It is to be sponged carefully and inspected to see that there is no bleeding, and covered with a sterile gauze pad before the child is removed. It is usually better to tie the cord promptly, in order to get the patient ready for the delivery of the placenta, and to move the baby into more comfortable quarters. There is a difference in opinion as to the time of ligating, but the question is immaterial. If the child is markedly asphyxiated it is necessary to tie at once in order to carry out the measures for reviving it. If there is not time for deliberate ligation the cord should be clamped in two places by hemostats and promptly cut.

The infant is removed to the receiver, which has been previously warmed, by lifting it with one hand grasping both ankles and the other supporting the head. It should be covered with a light blanket or afghan, head and all, and placed on its right side in a position where it will be safe from draft. It should always be taken from the bed. Covered as it is, it may be lost sight of and thus be carelessly treated. It is usually best protected by placing a pillow on either side of it, with an additional covering thrown lightly across the pillows.

Whether the patient has been delivered on her side or on her back, she must now rest in the latter position while the bed-pan is placed under her hips. The douche-pan may be used instead. The loose end of the cord is allowed to drop into the pan. The patient's knees are carefully covered and a fresh vulval pad, wrung out of bichlorid solution, is applied to the vulva. This should be inspected while waiting for the return of the pains which

are necessary for the expulsion of the placenta. The fundus should be palpated by dipping the outer edge of the hand behind the uterus and grasping the fundus in the flexed hand. Constant rubbing is not necessary under normal circumstances, although frequent palpation, in order to determine the degree of contraction, is indicated. As the placenta is delivered the nurse will receive it in the bed-pan, which is already under the patient. The bed-pan should now be removed, first having been covered with a towel. It is to be set in the bath-tub, after having been partly filled with water, or placed to one side out of sight, until the opportunity to inspect the after-birth arrives.

Before the soiled pad is removed from the bed the physician will probably wish to inspect the perineum in case of laceration. For this purpose the nurse should have at hand either an electric bulb or candle. After preparing a bichlorid solution and gauze wipes for the physician, she should place herself in a position where she can hold the light in order to facilitate the physician's examination. Should the perineum not be lacerated the soiled pad, sheet, and upper mackintosh are removed.

Assuming that the patient's night-dress has become stained, the removal of this is also included. To begin with, the soiled night-dress is stripped downward over the patient's shoulders until it is gathered about her hips. The safety-pins which fasten the pad and mackintosh at the head end of the bed are withdrawn, the pad and mackintosh are folded down, and gathered together, so that the soiled night-dress, pad, and mackintosh are stripped downward as far as the patient's waist and left, for the time being, gathered under her. A fresh night-dress, having been warmed, is first worked on to the patient's arms. The skirt having

been gathered up in the back, it is looped over the patient's head. The skirt remains about the shoulders until the pad and soiled night-dress are stripped entirely off the bed. In doing this the soiled night-dress is carried down over the knees and feet. The safety-pins holding the pad toward the foot of the bed are removed, and that edge folded upward just as the upper edge has been folded downward, and the pad, sheet, mackintosh, and night-dress are all removed in one bundle. At the moment they are taken away a fresh pad is placed under the patient's hips and a vulval pad applied, the patient having been thoroughly cleansed. The fresh night-dress is now drawn down into position and the patient is ready for the abdominal binder.

One end of the binder is gathered into folds, and with the patient turned somewhat toward the opposite side, is pushed under her hips. The patient turns again in the reverse direction while the nurse pulls the folded end of the binder out from beneath her. The nurse, with her left hand, gathers the two ends of the binder together at the center, having first turned under the end of the binder which is uppermost, in order to adapt its length to the girth of the hips. She then introduces the first safety-pin at the upper edge. Each successive pin is applied while the binder is drawn tight enough to fit into the patient's waist-line. Six safety-pins will usually suffice. The nurse should have pins ready so that she can reach them conveniently and she should see that the pins are unhooked, ready for use. Should the uterus contract imperfectly, a folded towel may be placed over the fundus, as a compress, before the binder is tightened. Inasmuch as the breast binder needs to be applied, at the latest, within a few hours, it is better to do it immediately after the abdominal binder is applied. The patient then becomes accus-

tomed to it. A fresh vulval pad is pinned to the lower portion of the abdominal binder.

The patient is now made comfortable in bed with a low pillow. The soiled clothing and bedding are removed and the light in the room lowered. Before the physician leaves, the nurse should take the patient's temperature and report to him the degree of contraction of the uterus and the amount of blood staining the vulval pad.

CHAPTER XIII

PROLONGED AND DIFFICULT LABOR

IT would scarcely be appropriate to speak of prolonged labor as abnormal, and yet the nurse's management in cases of prolonged labor will test her skill to a far greater extent than the grossly abnormal conditions requiring, for instance, operative help. In the latter cases the physician is called upon to bear the burden of responsibility, whereas in the former the nurse's resources in tiding her patient over the difficult stage of labor and in encouraging her to bear her pain will be taxed to the extreme limit.

The nurse should have knowledge of those conditions which, when appearing early in labor, promise a long, slow labor. In the first place, early rupture of the membranes will cause slow and imperfect dilatation of the mouth of the womb, so that by the time the second stage is reached the patient will not have enough reserve strength to help herself. In the next place the age of the patient will have a bearing upon the course of her labor. For instance, if the patient be a primipara beyond the age of thirty, she is likely to experience a long first stage in which the pains are apparently futile. Thirdly, a faulty presentation of the child, as, for instance, that of the breech or the face, as well as faulty position of the presenting part, say, where the occipital end of the head is posterior, instead of toward the front of the pelvis, will entail a long labor. Fourthly, if the appearance of the patient points to her carrying a large baby it is likely that her labor will be prolonged. Fifthly,

women of highly nervous temperament, who become easily exhausted and wrought up by pain, suffer more severely.

A difficult labor is one requiring in most instances operative treatment. Before, however, the necessity for interference occurs, the nurse's management of the labor will be the same as in prolonged labor. As to the causes of difficult labor, they are usually what are called anatomic, that is, dependent upon a faulty shape or size of the bony pelvis. In other words, they are due to obstruction. To be sure, faulty presentation and position of the child may make labor difficult, but these faulty conditions are often dependent upon an underlying deformity in the pelvis, however slight it may be. Unfortunately, there is no evidence in the woman's outward appearance that would suggest the defect in bony structure of the pelvis. It may be observed, however, that the stout, thick-set women, of low stature, are more likely to have a more difficult time than the slender, wiry women. Women in the better class of life are, other things being equal, more likely to go through labor better than those in the lower class. Again, the way in which a woman carries her baby may point to the kind of labor she is likely to have. When in the later period of pregnancy the uterus remains high and presses against the border of the ribs, the fetus is likely to be held in the false pelvis—in other words, the presenting part of the fetus refuses to engage in the inlet of the pelvis. On the other hand, a lax abdomen bespeaks an easy engagement of the head in the inlet.

In the management of prolonged labor the nurse may help her patient to bear the pain by suggesting a change of position. Many women are loath to abandon the recumbent posture. They lie with their knees drawn up, afraid to turn on one side or the other, lest the pains should increase;

whereas, if the patient lies on her side, notably on that side toward which the occipital or posterior end of the child's head is directed, as, for instance, on the left side in a left occipito-anterior position, her posture will favor rotation of the head in the proper direction—suitable for its ultimate expulsion. The lateral posture will also relieve, for the time being, the strain on the abdominal muscles

On the other hand, the patient may become so wrought up by her pains that she will waste her efforts thrashing from side to side in the bed. Here the nurse should quietly urge her to restrain herself, explaining the uselessness of expending her strength in this way. Many women complain of the rending pain in the back, as if the back were being dragged apart. Very often this can be at least partially relieved by the nurse pressing stoutly with her hands expanded against the sacrum, namely, just below the small of the back, during the pains while the patient lies on her side. Steady, hard rubbing over this region while the pain is at its height will also give relief.

It will be found in many instances that the patient may be relieved of the strain of labor by taking ether. The decision as to whether or not ether is indicated will come from the physician. If he urges it he may call upon the nurse to give it. Ether under these circumstances is given to produce what is called the first degree of anesthesia, that is, not to the full degree, such as to produce unconsciousness. The method of administering ether has already been described in a previous chapter (see page 101). In prolonged labor it is sometimes a mistake to begin the administration of ether early, as the patient in her desperation will not give it up; thus, by the time the second stage is reached she will have become so dependent upon the ether that she will not be able to respond to the instinct to bear down.

Should the patient continue in labor for a long period, especially if the child's head exerts steady pressure upon the bladder, it may be necessary to catheterize her. The nurse should at least be particular to learn whether the patient has the desire to urinate or not. A full bladder will retard still further her labor.

As to difficult or obstructed labor, there will come a time when the question of operative interference will arise. By the time operation is determined upon the nurse should have planned the necessary preparation. There is no doubt that difficult cases can be conducted more successfully with two nurses. If it is possible for the nurse in charge to have assistance, her plans can be best carried out by leaving the assistant nurse with the patient while the nurse herself makes the preliminary arrangements for the operation. She should see, particularly, that there is a plentiful supply of hot water. Sterile water should also be provided convenient to the room in which the patient is to be delivered. The nurse should endeavor to select a room separate from that in which the labor is being conducted—a room with good light, unnecessary furniture removed, and the stationary pieces of furniture, such as bookcases and other heavy pieces, covered with sheeting; the nurse should prepare the kitchen or other stationary table on which the patient is to be placed, cleansing it thoroughly and going over it with a bichlorid solution. When the table is dry it should be covered by a heavy folded blanket, this in turn to be covered by a sterile sheet kept in place by safety-pins holding it at the corners. The floor should be protected and one or more waste pans at hand. The nurse should keep free a place on the range, and should have a large boiler cleansed for the sterilization of the instruments. Basins, trays, or even flat dishes, should be cleansed and sterilized

ready for sutures and needles. Such preparation should be carried out without the patient's knowledge.

In obstructed labor, where the patient has suffered for a long time, the nurse should be prepared for signs of exhaustion. The patient's temperature should be taken at intervals of three hours, and the pulse more or less frequently counted. It will be important for the nurse to learn the condition of the fetus; she can get a knowledge of this by asking the patient whether or not she notices the fetal movements. Should there be any doubt of this, especially if the physician is not within immediate reach, the nurse should determine for herself the condition of the heart sounds. The method of examining the heart has been described in a previous chapter (see page 26).

CHAPTER XIV

EMERGENCIES AND COMPLICATIONS IN LABOR

THE emergencies which occur in labor are usually grave, in that they arise suddenly and that the nurse is unable to cope with them single-handed. They further affect two lives, that of the child and the mother. Those of most common occurrence are convulsions and hemorrhage. Both of these have been fully treated in a previous chapter.

Convulsions.—As to convulsions, however, the nurse should always be prepared for their occurrence. Usually the presence of albumin in the urine is a forerunner; at the same time, in women who have suffered from the toxemia of pregnancy the strain of labor may be the last straw to break the resistance to threatened eclampsia. Again, as the child's head passes over the perineum the reflex effect upon the woman's nervous system of the stretching of this part may produce a convulsion. The nurse may also be enlightened in her observation of approaching danger by the amount of urine excreted after the beginning of labor. Should the urine be deficient, the kidneys are inactive. Sudden blindness during labor may be the first sign of threatening eclampsia. This may make its appearance in a hitherto apparently normal case.

Hemorrhage.—As to hemorrhage, the common causes lie: first, in placenta previa; second, in the accidental hemorrhage which comes from early detachment of the normally situated placenta; third, in rupture of a dilated vein in the vagina.

Where the placenta is situated fully over the mouth of the womb, the hemorrhage usually comes on during pregnancy. When it is situated partially over the mouth of the womb it may come on with the beginning of labor. The bleeding may be very severe, jeopardizing both the mother's and infant's life. The handling of this condition has been alluded to elsewhere.

In partial placenta previa the detached edge of the placenta may be pressed upon by the advancing head, so that, as the latter is forced down by the contraction of the uterus the bleeding may cease; as, however, the pressure of the head is relaxed, in the interval between pains, the bleeding may come on again. The nurse should observe, therefore, when the bleeding occurs in such cases, whether it is with the pains or between them.

In accidental detachment of the placenta the hemorrhage is independent of the pains; it usually comes on early in labor and is apt to be free.

The rupture of a vein in the vagina is a rare occurrence. The amount of blood lost by the vagina may not correspond to the severity of the rupture, as the blood may accumulate beneath the mucous membrane of the vagina. In such case the nurse might be surprised at the degree of shock when so little blood is being lost. The management of such a case is the same as that described formerly in speaking of hemorrhage.

Hemorrhage in the last stage of labor, namely, that between the expulsion of the child and delivery of the after-birth, comes usually from a relaxed condition of the uterus. After the delivery of the placenta, hemorrhage may come from simple want of contraction, or from the retention within the uterus of part of the placenta or membranes. Two very important points are to be remembered in this connection; one is that the degree of contraction of the womb should be observed by palpat-

ing the fundus through the abdominal wall; the other is that the placenta should be kept ready for inspection, in case it might reveal a deficient particle of placental tissue or membrane. In general, the great point to be observed is to be ready for such an emergency, and, principally in this respect, to have plenty of hot water ready and the douching apparatus prepared.

Sometimes severe bleeding may occur, both before and after the placenta is delivered, from a deep tear in the cervix. Here, should the physician's examination reveal such an occurrence, the nurse should have the instruments, sutures, and needles ready for stitching. Gauze strips for packing are needed in cases of severe hemorrhage. In hospital practice these are always ready. In private work, if sterile gauze and scissors are ready, only a few minutes are needed to prepare the strips. It may require a great quantity of gauze for this purpose, and yards of stripping may be used, as not only the dilated cavity of the womb, but the vagina as well may have to be thoroughly packed. Small handfuls of gauze packing are of no use whatever, and the nurse will only betray her want of training by offering to the physician an insufficient amount of gauze for packing, or strips of insufficient width. The strips of gauze should be from 3 to 4 inches in width and 3 yards in length.

Shock.—Shock is another of the graver conditions occurring suddenly in labor. It is also of such common occurrence after the second or third stage of labor that the nurse should always look upon it as one of the emergencies for which she should be prepared. During labor it may be one of the accompaniments of hemorrhage arising from the causes described above. Shock is also a symptom of rupture of the uterus, or tearing through the muscular wall of the latter. If due to this

cause, it reveals a serious condition of things, and one requiring surgical treatment. Rupture of the uterus rarely occurs without some active interference on the part of the physician with the object of accomplishing delivery in a difficult case. It may, on the other hand, arise from tearing of the cervix, where the latter does not dilate properly. In case the tear is extensive it may not be limited to the cervix, but may extend upward, involving the wall of the uterus. Rupture of the uterus is not always accompanied by bleeding. Therefore, the absence of bleeding in a condition of shock is not of favorable significance—rather the opposite, as severe shock, which cannot be accounted for by loss of blood, points during labor to rupture of the uterus.

In the presence of such an emergency it can be readily seen that the nurse is powerless to cope with the situation, except by placing herself in prompt readiness to assist the physician. Presence of mind on the part of the nurse will enable her to make her efforts useful to the extent of actually saving life. On the other hand, the panic which comes from not being prepared for emergencies of this character will rob the nurse of her efficiency, no matter how intelligent and conscientious she may be.

Following the delivery of the child shock may occur from various causes. These will be enumerated later, but at the same time it must be admitted that a state of shock which may be alarming, and which may last for a considerable time, is likely to occur without any apparent reason other, perhaps, than the exhaustion which follows prolonged labor. Yet such labors occur in a large percentage of women without shock; so that there is evidently some inherent condition in individual women making them liable to shock. The matter needs to be gone into thus particularly, as the

nurse is often thrown off her guard in the matter of expecting such a condition, and is more than likely to be unprepared for it. How often have the nurse and physician, in the midst of the sense of relief in having successfully managed a difficult labor, been surprised to see the patient grow suddenly pallid, the pulse imperceptible, the uterus relaxed—and yet in the total absence of signs of bleeding! The situation is anything but reassuring and the want of preparation on the part of the nurse throws her into confusion at the moment when deliberate action is most needed.

Although bleeding may be absent, there seems to be some connection between the relaxed condition of the womb and shock. The physician will, therefore, probably direct his attention to stimulating the womb to contract. For this purpose he will need plenty of hot water and the douching apparatus ready, including a glass nozzle which can be safely carried well up into the uterine cavity. The hypodermic outfit should also be at hand. Further than this, to relieve such patients artificial respiration and hot saline injections into the bowel may be resorted to. For the latter the nurse should be prepared with hot water and salt for making the solution. The elevation of the foot of the bed may also be necessary. The nurse should remember that it sometimes takes several minutes to revive such patients; she should, therefore, anticipate the failure of successive efforts which are made, and be prepared for the next step to be taken.

There are other conditions in which shock may more naturally be expected. They are: the more or less sudden emptying of the over-distended uterus in the delivery, for instance, of twins; the collapse which follows etherization in a prolonged and difficult labor; heart failure in worn-out women, or in those who are actually the victims of

heart disease; finally, the want of reaction in delicate women of nervous temperament. Shock is not to be expected in all such conditions, except perhaps in heart disease, but the fact that it may occur makes it important that the nurse should at least be informed as to the possibility. In addition to these causes, serious loss of blood is always accompanied by shock. Rupture of the uterus is also accompanied by shock, but this has been spoken of in a previous paragraph.

MINOR COMPLICATIONS

Cramp.—Complications arising in the mother's condition are numerous enough to cause the nurse to expect the course of even normal labor to be marked by some slight irregularity. Among the milder conditions may be mentioned the cramp-like pains that come in the muscles of the calf or thigh. Although these pains are of minor import, they cause the patient great annoyance and interfere with her directing all her efforts toward her labor. A change of posture from the back to the side, or vice versa, will often relieve the patient. Rubbing over the muscles or straightening the limb will also bring relief.

Syncope.—Among other complications in labor is that of weakness in the heart's action. This may occur in prolonged labor in a patient whose heart is weak, either in sympathy with the general weakness of ill-health or as the result of actual disease of the heart. Irregular and deficient pulse, with oppressed breathing, are the symptoms. The patient is relieved by inhalation of ammonia or by hypodermic injection of strychnin. Should cyanosis appear, with a distressed appearance of the countenance, the patient's symptoms are in all probability due to serious heart failure and her relief must come from energetic treatment at the hands of the physician. Under all circumstances faintness,

with irregularity of the pulse, however transient, should demand the physician's presence.

In cases of heart weakness, in mild diseases of the heart, ether given to the first degree of anesthesia is likely to stimulate the heart's action.

Vomiting.—Another complication in labor is that of vomiting. This is a common occurrence toward the end of a hard labor, and comes very often from exhaustion. It may be simply the vomiting of frothy mucus, but more frequently the vomited matter is bile. Vomiting is not a serious complication and its effects are principally those which arise from the prostration following the act of vomiting. Excessive vomiting, on the other hand, may be due to the same disturbance which produces the vomiting of pregnancy. Such incessant vomiting will interfere with the progress of labor from the exhaustion which it causes the patient. It now becomes a serious symptom requiring the termination of labor. The presence of blood in the vomited matter comes usually simply from straining, but a great amount of blood means a hemorrhage into the stomach from some cause, usually an ulcer of the stomach. This would be a rare occurrence and of course would require the physician's decision as to what should be done. As far as the nurse is concerned, in treating vomiting in labor she should be careful to restrict the patient's diet at the beginning of labor. Usually some light nourishment, such as tea, or possibly hot milk, or coffee and toast, will be enough, provided she does not become exhausted from the lack of food and demand it for this reason. If food be given after the labor pains become active the patient will be liable to vomit.

Distention of the Bladder.—The progress of labor is often interfered with by the distention of the bladder. The pressure of the distended bladder exerts, during the second stage, a hindrance

to labor, both by reducing the effectiveness of the pains and by the actual obstruction to the descent of the head in the pelvis. It is often observed, at the time when the placenta is expressed at the end of labor, that a considerable amount of urine is forced out at the same time, showing how common it is for retention of urine to take place during labor. In such instances the nurse may not even have suspected that the bladder has contained any but a small amount of urine. In looking back at the course of labor in which this expression of urine occurs at the final stage, it may be possible to account for the prolongation of the labor through the existence of this cause. Huge abdominal distention, causing great compression and distress to the patient, has been observed in the beginning of labor, where the patient, through ignorance, has not recognized the distention of an over-full bladder. The bladder in such instances may hold several quarts of urine.

The nurse should be careful to observe the frequency with which the patient voids urine during labor. She should also be able to distinguish between the leakage of the amniotic fluid and the dribbling of urine. She should finally bear in mind that a distended bladder may leak urine; the latter is discharged in small quantities, not enough to relieve the distention, and its appearance may deceive the nurse by causing her to believe that the bladder is really being emptied by the discharge of these small quantities.

It is not difficult to recognize by palpation the distended bladder in women who are not too fat. It forms a rounded, fluctuating mass above the symphysis pubis, lying in front of the uterus.

Retention of the After-birth and Membranes.—The chance of complications is not passed until labor is completed by the expulsion of the placenta. In fact the final return of the patient

to a condition in which she can be safely left to herself may be delayed by the retention within the womb of a portion of the after-birth or its membranes. This may or may not be accompanied by hemorrhage.

Irrespective of the actual adherence of the placenta within the uterus, it may be retained by an irregular contraction of the uterus. Natural expulsion of the placenta will in such a case not occur, and it will be necessary to expel it by what is called the Credé Method. This simply means the grasping of the fundus of the uterus by the physician in such a way as to press the uterus downward and somewhat backward, forcing the placenta out of the uterine cavity.

Before it is possible to judge whether the placenta should be expelled or not, it will be necessary to know how high the fundus of the uterus rises from its original position after the birth of the child. This rising of the fundus to a higher level in the abdominal cavity means relaxation of the uterus to the extent of permitting the accumulation of blood between the placenta and the surface of its attachment, and is the indication for the attempt to expel the placenta. Any effort to do so before this has occurred would only increase the tendency for the uterus to contract upon the placenta and hold it within the uterine cavity.

Shreds of membrane within the uterus usually show their presence simply by the deficiency in the edge of the amniotic sac after its expulsion with the placenta, or perhaps by the delicate strand of membrane appearing at the vulva. It is usually unsafe to allow the particle of membrane to remain within the uterus, and yet the invasion of the uterine cavity to dislodge it is an undertaking that must be carried out with great care. If the physician desires to remove the membrane with his hand he may perhaps need the nurse's assistance in

etherizing the patient. Sometimes ether is dispensed with. Under all circumstances, however, the nurse should have fresh, warm solutions at hand in order that the physician may be able to thoroughly disinfect his hands and forearms. She should have also hot sterile water for douching. Should the physician decide to wash the membrane away by giving an intra-uterine douche he would need either a sterile glass nozzle, carried into the uterine cavity along the fingers in the vagina, or a uterine douch-

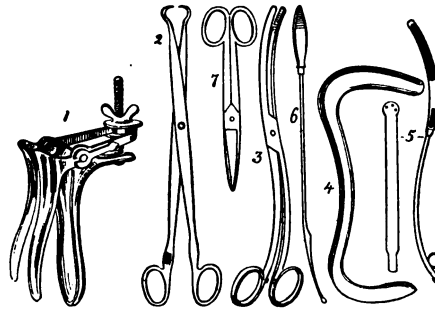

FIG. 37.—Instruments used for intra-uterine douche after delivery; 1, Trivalve speculum; 2, tenaculum-forceps; 3, dressing-forceps; 4, Sims' speculum; 5, douche nozzle and catheter; 6, sound; 7, scissors.

ing catheter. To expose the cervix, should he use the catheter, he would need either a three-bladed speculum or Sims' speculum; he would need also a tenaculum-forceps and a dressing-forceps. The nurse's hands should be thoroughly disinfected, as she may have to attach the catheter to the rubber tube leading from the douche can or bag, and in doing so her hands should be surgically clean.

To dislodge an adherent placenta or adherent particles of placenta, the physician's hand is introduced into the womb, usually while the patient is under ether. Preparations for a succeeding douche should be made.

COMPLICATIONS AFFECTING THE CHILD

Intra-uterine Asphyxia. — A complication which promises the death of the fetus, unless relieved, is that of asphyxia, or suffocation within the womb, usually from pressure upon the cord. The signs of asphyxia are evident both in the condition of the fetal heart and in the passage of meconium (the discharge from the child's bowel) with the amniotic fluid, should the latter be discharged after rupture of the membranes. The meconium is discharged, owing to the relaxation of the sphincter muscles of the anus, and stains the amniotic fluid a darkish brown. The presence of meconium in breech cases is less alarming, as it is here simply pressed out of the bowel by the engagement and descent of the breech in the compressing grasp of the pelvis and soft parts of the birth canal. A darkish color of the amniotic discharge should always be looked upon with suspicion. It is always the occasion for the physician's presence.

Prolapse of the Cord.—Another complication affecting the life of the child is descent or prolapse of the cord. It usually requires an examination by the physician to detect this. There is, however, one incident in labor which invites prolapse of the cord, that is, the sudden discharge of the amniotic fluid following rupture of the membranes. If there is a considerable amount of fluid and an imperfect engagement of the presenting part of the child, a loop of the cord may be washed down into the vagina with the draining away of the fluid. The great danger in this accident lies in the persistency with which the cord again slips into the vagina after it is replaced. To accomplish its reposition the utmost skill of the physician is demanded, but in addition to his efforts the woman's posture should be such that gravity will aid in retaining the cord after it is replaced. If, therefore, the nurse should discover a loop of the cord at the vulva she should at

once send for the physician. In the meantime the patient is to be put in the knee-chest position with her head resting on the mattress, her chest upon pillow, and her pelvis elevated, while she rests upon her knees. It is obvious that a woman in labor cannot assume such a position indefinitely; and

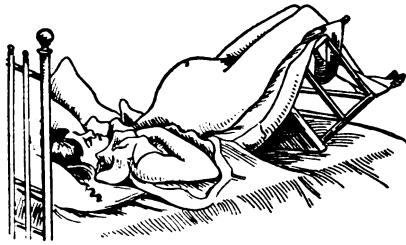

FIG. 38.—Posture of the patient under treatment for prolapse of the cord (after Hirst).

her discomfort may be relieved by placing her on her back, resting on an inverted chair, the back of which is uppermost and protected by a pillow. Thus, her head will be downward and her hips elevated (Fig. 38). A change from one position to the other may tide the situation over until the arrival of the physician.

CHAPTER XV

OBSTETRIC OPERATIONS

THE operations which are performed in connection with delivery are of three kinds: first, those which are required to terminate pregnancy; second, those which are necessary to extract the child; third, those for the purpose of restoring the mother's parts after delivery. Obstetric operations may be performed by the use of instruments, or by manipulation without instruments.

The nurse should have a knowledge of the general features of such operations; the scope of her knowledge should particularly include the preparation of the patient for each operation, the instruments needed, and method of assisting the physician, as well as the care of the patient after the operation.

Induction of Labor.—Operative means for terminating pregnancy are of two-fold variety, depending upon the urgency with which it is necessary to bring labor on. In cases where time permits the slow method may be resorted to. In cases where the child must be delivered hastily more rapid means must be used. The general term which includes all the procedures for this purpose is "The Induction of Labor." Where the operation can be carried out deliberately it may be performed by one of three methods:

First, by inserting into the uterus an elastic bougie (a flexible dilating instrument, rod-like in appearance, of about the diameter of a pencil and over a foot in length). Bougies are covered with woven silk which is in turn varnished. They may

be hollow to accommodate a guiding wire which is called the stylet, or they may be solid, without the stylet.

Second, by distending the mouth of the womb and the vagina with gauze packed tightly.

Third, by introducing within the cervix dilating rubber bags.

For the introduction of the bougie the nurse should be prepared to assist the physician in the following particulars:

In the first place she should have at hand, for use in anesthetizing, ether, gauze, towels, and a small basin. She should have a table ready for the patient to be placed upon, in order that the operation can be carried out at the proper elevation; she should have the solution for disinfecting the hands ready, as well as green soap, gauze sponges, Kelly pad or freshly sterilized mackintosh, douche apparatus, and waste pans. It is impossible to sterilize a silk bougie by boiling it. It should, therefore, be prepared as follows: first, by scrubbing it with green soap; then by immersing it for as long a period as possible in bichlorid solution (1 to 1000). It is then carefully removed from the bichlorid solution by handling it with sterile gauze after the hands have been disinfected, and placed either in a flat instrument tray or a thoroughly clean platter, either one of which, if used, should have been sterilized. The bougie is then covered by a solution of glycerin and carbolic acid (five parts of glycerin and one of carbolic acid). Two or more bougies should be in readiness. The bougie is now ready to be used by the physician. Next the nurse should have at hand the following instruments, which shall have been carefully sterilized: a Sims speculum, tenaculum-forceps, cervical dilator, uterine dressing-forceps, tissue-forceps, uterine sound, and scissors. There should also be at hand either plain sterile gauze or iodoform gauze, to be packed

into the cervix to hold the bougie in place. If iodoform gauze is used it should be cut in strips 2 inches in width, and packed in a sterile glass tube which is plugged with cotton, the tube and contents having been sterilized by the dry process. If the plain gauze is used it can be cut in the same width and used from a muslin package which has been sterilized.

The patient should be prepared as for labor. She should have a warm bath and enema; the

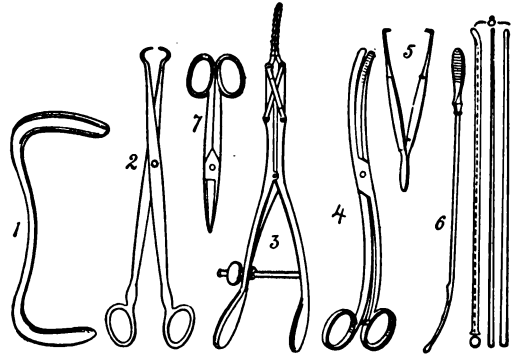

FIG. 39.—Instruments used in the customary method of inducing labor: 1, Sims' speculum; 2, tenaculum-forceps; 3, dilator; 4, dressing-forceps; 5, tissue-forceps; 6, sound; 7, scissors; 8, bougies.

physician may require, as well, a vaginal douche. The patient should be placed upon her back upon the table, her legs properly protected and drawn up into position by a sling leg-holder. The table should be protected by the Kelly pad or mackintosh.

After the operation the patient is placed in bed, the latter having been protected by a rubber sheet and small bed-pad, the rubber sheet being placed between the under sheet and mattress. A vulval pad should be placed between the thighs. If the patient has had ether she should be allowed to

sleep. When she revives she should be cautioned to keep the recumbent position until her pains come on. There may be an interval of some hours between the introduction of the bougie, or bougies, if more than one is used, and the appearance of pain. The pain comes on gradually and usually does not become pronounced until from twelve to eighteen hours after the insertion of the bougie. During this time the nurse should observe whether the patient is able to urinate or not, she should change the vulval pad every three hours, and inspect the discharge from the vagina. After labor pains become active the nurse should notify the physician, as a sudden strong expulsive effort might complete the patient's labor, especially if labor has been induced at a time when the child has not reached its full growth. The nurse should bear in mind also that a gush of amniotic fluid is likely to occur after the beginning of the pains, pointing to the completion of labor. Should the pains remain moderate, or should the patient be free from pain for twenty-four hours, the physician should be notified, in case he has not been called, in order that a fresh bougie may be introduced, as it is unsafe to allow the patient to go for a longer time than this without recleansing and disinfecting the vagina.

For inducing labor by the second method, namely that of packing the cervix and vagina with gauze, the same general preparation should be carried out. Usually the cervix will have to be dilated as a preliminary. Therefore, practically the same instruments are required. A packing staff resembling a stout probe, with the exception that the end is furnished with small prongs to catch the gauze and carry it within the cervix, is a useful addition to the list of instruments. The nurse should remember in handing the gauze to the physician that it should be passed to him

either in the sterile package which has been unfastened or in a sterile towel. If iodoform gauze for the cervix is used from a tube, the latter should be handled by the nurse by means of a sterile towel. If the vagina is thoroughly packed, the strips of gauze should be at least 3 inches in width and may even be of two-fold thickness. All possibility of contact with unsterile surroundings, while handling the gauze, should be avoided. The after-care of the patient is practically the same as that described in carrying out the first method.

In bringing on labor by the third method, namely, by dilating the cervical canal with rubber bags, the patient should be carefully prepared, and in

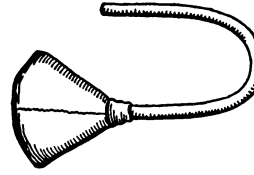

FIG. 40.—Rubber bag used for dilatation in the induction of labor.

most cases anesthetized, in order to keep the field of operation free from contamination. There are two patterns of rubber dilating bags: one is the cone-shaped bag, as illustrated above, and known as the Voorhees bag. The other is a bag with two compartments, one for dilatation of the cervix and the other for dilatation of the vagina, there being a separate tube for each compartment. This is known as Pomeroy's bag. The Voorhees bag is meant to be inserted entirely beyond the cervical canal and to occupy the lower portion of the uterine cavity. Both bags are dilated after insertion by the pressure of water which is forced into them by a syringe or douche can at a high level. There are also other single bags, as that

of Voorhees, designed for retention within the cervical canal. All these bags may be sterilized by boiling.

To introduce dilating bags it is necessary first, that the cervix should be dilated instrumentally, in case dilatation has not begun. After this is accomplished the nurse should have the bag ready for the physician, as well as a uterine dressing-forceps or placental forceps, which is used to grasp the folded bag and carry it within the uterine cavity. It will be seen that the list of instruments is practically the same as that for the induction of labor by the first two methods.

Although this is an efficient method of inducing labor the pains may, nevertheless, be delayed. Under such circumstances a larger bag may have to be introduced later. It is sometimes advisable to attach a weight to the rubber tube of the Voorhees bag in order that downward pressure upon the lower portion of the uterus may be exerted. If this is done, the nurse will have to use all her adroitness in keeping the patient quiet, as the patient might become infected, should the bag become displaced or contaminated by unclean material finding its way into the vagina.

The Voorhees bags contain from 10 oz. to a pint of water, or from 200 to 400 cc. The water which is used to distend them should have been sterilized and rendered antiseptic by the addition of carbolic acid, making a solution of 1 to 40. It should be warmed to a temperature of 110°. The best lubricant for the bag, in order to facilitate its insertion, is lysol or green soap. The nurse should test the bag, before it is used, by distending it with water injected by a Davidson syringe.

Where it is necessary to induce labor promptly, in the complete absence of any dilatation of the cervix, less protracted methods will have to be

resorted to. The rapid opening of the mouth of the womb, together with forcible extraction of the child, is spoken of as Accouchement Forcé.

Rapid dilatation may be accomplished first, by the hand; second, by heavy instrumental dilators. In the first instance no instruments are required other than what should be at hand to extract the child promptly after dilatation is complete. The patient should always be etherized. In the second instance, in addition to the tenaculum-forceps to hold the cervix in position and the speculum to expose the latter, there should be at hand the heavy four-branched dilator spoken of as the Bossi dilator, or the lighter dilators used in gynecologic practice. For either procedure the disinfecting solutions, sponges, and basins should be at hand, also the means of resuscitating the child (to be described later) and the instruments and sutures used to repair the perineum.

There is still another method of opening the womb for the purpose of extracting the child by way of the vagina; this lies in the incision of the cervix, which opens the os by cutting instead of by dilatation. Beside the instruments mentioned as necessary, a scalpel, hemostats, catgut ligatures, and silk sutures should be at hand. The hemostats, the ligatures, and sutures are needed not only in the repair of the points of incision, but in case of hemorrhage.

In cases of rapid extraction of the child the nurse should have at hand douching apparatus and gauze packing in case of hemorrhage from the womb, following the sudden withdrawal of the child. Hot saline solution, hypodermic needle, ergot, and hot-water bottles should be ready in case of shock.

The operations resorted to for the purpose of extracting the child may be divided into those

practised upon the living child, and those for the destruction of the child's life, where it is impossible to deliver a living child, and for the reduction of the bulk of a dead child that cannot be delivered otherwise. The first class of these operations includes Cesarean Section, Symphyseotomy, Forceps Delivery, Version or turning the child, and the manual delivery of the child when presenting by the breech.

The graver operations, such as Cesarean Section and Symphyseotomy, are performed usually in hospital. They are grave surgical procedures and should be carried out only with the most perfect appointments at hand. It will be well, however, to describe them in a general way.

Cesarean Section.—Cesarean Section comprises cutting through the abdominal wall until the enlarged uterus is exposed within the abdomen. Incision is then made through the uterine wall. The child is extracted through this incision and the placenta and membranes removed from the cavity of the womb. The incision in the uterus is brought together by either silk or catgut sutures. The abdominal incision is also closed by sutures and the patient treated as a surgical case. The instruments and dressings are those which are required for abdominal section. From an obstetric standpoint there are certain points about which the nurse should have complete information. In the first place the shock and loss of blood following the incision in the uterus will seriously affect the vitality of the child. At the moment of extraction, therefore, the nurse should receive it in a properly protected blanket, while an assistant nurse clamps the cord at two points, namely, those points at which the ligatures are usually applied. The cord must be divided promptly between the hemostats and the child transferred to a hot bath. The method of resuscitating the infant will be

taken up later, but it is important that the nurse should understand the necessity for prompt action in receiving the child, clamping and ligating the cord, and reviving the child.

In the next place, although the patient becomes a surgical patient from the moment of operation, she requires, as well, obstetric care in the matter of beginning lactation. It is common for such patients to nurse their children, and there is no reason why they should not do so. The nurse should remember that the natural birth canal is to be, as far as possible, sealed off from any contact with the exterior. In other words, the vagina is not to be invaded for the purpose of douching, and catheterization, if necessary, must be carried out with the greatest care. The reason for this is that infection through the vagina would probably cost the patient her life.

Symphyseotomy.—Symphyseotomy is the cutting through the symphysis pubis, in order to permit of a lateral separation of the sides of the pelvis. An increase in the diameters of the inlet of the pelvis follows. Symphyseotomy is an operation which has been almost entirely replaced by Cesarean Section. The significance of the obstetric nursing of Symphyseotomy cases lies principally in their after-treatment. The patient is either slung between parallel bars so that the pressure of the sling in which she rests will drive the divided edges of the pubic joint together during healing, or her pelvis is kept immovable by sand-bags, placed lengthwise on either side. It requires great care to keep the patient clean, as her position interferes with the proper changing of the bed-pad and freshening of the surface on which she lies.

Pubiotomy.—Pubiotomy is an operation at present in vogue, in preference to Symphyseotomy. Pubiotomy is the cutting of the pubic bone to one side of the symphysis. This is accomplished

by a narrow flexible saw which is introduced beneath the skin and again carried out, so that the sawing motion cuts through the bone from its inner surface outward. The operation requires the use of the forceps under usual conditions to facilitate the extraction of the child's head. Inasmuch as the operation is attended with separation of the bony pelvis, the case is treated afterward with sand-bags and the patient is placed on a more or less yielding bed to promote the lateral pressure of the heavy sand-bags; the sides of the pelvis at the point of separation are thus kept firmly together. As in Symphyseotomy, it requires the utmost care on the part of the nurse to keep such patients clean. A stout binder enveloping the pelvis is used in the after-treatment of both operations.

Delivery by Forceps.—The use of obstetric forceps is indicated in those cases where the head of the child descends first. The forceps has been invented as a means of traction upon the head. Where the pains are deficient or where a deformity of the bony pelvis obstructs the passage of the head, we have in the forceps a means of supplying by traction a force which takes the place of the expulsive action of the womb. Generally speaking, there are two patterns of forceps: one is the ordinary obstetric forceps, the other is what is called the Axis-traction forceps. It is not necessary that the nurse should be informed as to the precise indication for the use of the forceps or even as to the method of its application. What she should know concerning it is the shape and parts of the instrument.

The forceps is comprised of two branches which are called, respectively, the right and left branch. These branches cross each other at the point where they are locked. One end of each branch terminates in the handle, the opposite end in the blade. The blades are meant to grasp the child's

head. When they are in position in the pelvis they are directed, one on each side of the pelvis, with the concavity of the blades grasping the head. In the axis-traction forceps, or the Tarnier pattern,

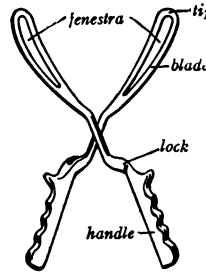

FIG. 41.—Designation of parts of forceps (the instrument unlocked).

the lock is furnished with a thumb-screw which, when tightened, fixes the blades in position firmly against the head, thus unifying the head and blades, so that the head yields to the force applied to the handles of the instrument. The axis

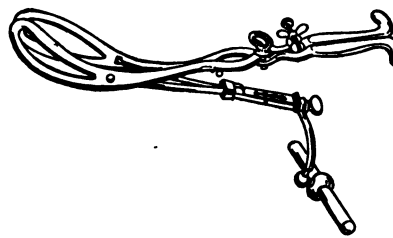

FIG. 42.—Tarnier's axis-traction forceps.

traction forceps is supplied also with what are called traction rods, fastened by a movable joint at the under portion of the blades. To these traction rods is also fastened, by means of a sliding lock, what is called the handle-bar. The handles of the instrument are used simply to introduce and

apply the blades, the handle-bar is used to mak
traction.

Should the nurse be called upon to assist th
physician in the capacity of handing the instru
ments to him, she should, of course, be conversan
with the different portions of it. If, for instanc
she is asked to give him the right branch sh
should know which this is; if, again, she is asked t
immerse the instrument, blade downward, i
solution, she should know which part of the instru
ment the blade is. If both patterns of forceps ar
prepared for use and the doctor should ask for th
Tarnier instrument, the nurse should know whic
this is; if she is asked for the traction rod of th
latter instrument she should also be able to recog
nize this. As to the ordinary forceps, there
a variety of patterns, all differing from one anothe
in but very few particulars, except in the shap
and degree of separation of the blades. Th
Simpson forceps is the instrument with a blad
widest at its point, with considerable separatio
between the tips or points of the blades, and wit
a socket and shoulder-lock, in contradistinctio
to the forceps which has blades of more equa
dimension at both ends, close approximation of th
points of the blades; also a pivot and notch-lock

The patient and her surroundings should b
prepared as described above for the induction o
labor. She should be anesthetized and place
upon a table. Sometimes both the physician an
nurse will find themselves in surroundings in whic
careful preparation cannot be made, and in whic
the use of the bed must be resorted to instead of th
table. Here, whatever

may be urgency in carrying out the operation. Nevertheless, the forceps should be applied with scrupulous care as to the cleanliness in which the operation is performed, and with deliberation. It is a great deal better that the nurse should spend a longer time in looking after every particular of the preparation of her patient and her surroundings than that the operation should be delayed by not having at hand whatever is necessary. Beside this, the risk of infecting a patient by an operation which is performed after a long period of exhausting pain is very great. Finally, the nurse should make preparations for the accidents which may follow the extraction of the child; they are, on the part of the mother: hemorrhage, collapse, and laceration of the perineum; on the part of the child: shock from the pressure of the instrument or from suppressed vitality due to long pressure during labor.

As to the actual surroundings of the patient, the nurse should have the forceps either in a tray or basin, both instruments and receptacle having been sterilized, or the forceps may be immersed in sterile water; the tray or basin used should be covered with a sterile towel. Sometimes it is sufficient to take the instruments from the boiler wrapped in the towel in which they have been sterilized; the towel is then unfolded and placed upon a dry sterile towel. The nurse should remember to have the forceps within reach so that when the physician introduces one hand into the vagina as a guide for the blade, he will not have to reach for the needed branch of the forceps at an awkward distance. The nurse should have the catheter, preparatory to emptying the bladder before the operation; she should have the douching apparatus and hot water ready; she should have the perineal instruments and sutures at hand; she should have a supply of gauze sponges, lubricating material,

and disinfecting solution ready; she should be ready to renew the bichlorid solution and sterile water, and to see that the solutions do not grow cold.

There is no question of the difficulty which a nurse has to contend with in assisting satisfactorily in forceps operation. To be carried out properly the operator should have an assistant to his nurse. The physician and nurse should be free from the responsibility of looking after the patient during the etherization. This means, of course, an anesthetizer as well. Every operator, however, will make full allowance for the way in which the nurse is handicapped; but the two things which the physician has a right to expect are alertness and foresight in anticipating his needs in the operation.

After the child is extracted the nurse should remember to compress the fundus in order to be assured of the proper contraction of the womb. She should go immediately from this, if she finds the uterus in good condition, to the resuscitation of the child. As soon as the patient is placed in bed and the child is in good condition she should remove from the room the evidence of operation and get things in order as promptly as possible.

Version.—Version in many instances is a difficult operation. If the child is to be safely extracted after turning, the extraction should be carried out with great despatch. For this reason the nurse should have everything at hand before the operation is undertaken. There should be no delay in running for necessary articles at a time when she should be at the operator's elbow. Among the accidents likely to occur during version is that of prolapse of the umbilical cord. The cord may also be wound about an arm or leg, or about the neck of the child. This means compression of the cord and interference with the circulation through

it. As a consequence the child's life may be endangered. Thus, not only promptness in delivery is necessary, but the preparation for reviving the child should be thought of. The commonest method of turning the fetus in the womb is that of bringing the feet down, thus displacing the head from the inlet of the pelvis and substituting the breech or buttocks for it. In some instances, after turning, the child is not extracted. It is left with the breech presenting, and within the vagina, until the pains return, when the patient may be able to expel the child herself. Under these circumstances the nurse should watch the patient closely, observing especially the discharge from the vagina. The meconium may become mixed with the amniotic fluid which leaks out, giving the latter a dark-greenish appearance. The presence of meconium in the discharge means that the child is in danger and that it is necessary that the extraction of the child should take place at once. The condition of the fetal heart should also be carefully noted.

The preparation is the same as in instrumental delivery. The patient must be thoroughly etherized. In some cases it is necessary to deliver the child's head, which follows the extraction of the body, with forceps. The latter should, therefore, be prepared for use.

Delivery of the Breech.—Delivery in breech presentations is by the same method of extraction as that carried out after version. The difficulty in the operation arises from the fact that the child's legs are sometimes extended along its abdomen, so that the feet are well out of reach of the operator. Under these circumstances, should the physician be unsuccessful in bringing the feet down, he may attempt to deliver the child's buttocks by making traction upon the breech, either by hooking his finger in each groin and thus dragging the breech down to the vulva, or by passing what is spoken

of as the fillet between the thigh and the body the child and thus making traction by means this instead of by the hands. Again, instead of fillet or the fingers, the blunt-hook may be used.

It would only be in an extremely difficult c or one that had been badly managed, in which fillet would have to be used; nevertheless, the nu should be prepared for such a contingency should have a strip of gauze 1 yard in len folded in a three-fold thickness, with a width or 3 inches, sterilized, ready for use as a fi The blunt-hook would be furnished among other instruments required by the operator. nurse should, however, see that it is sterilized, re for use. As in version, the after-coming head have to be delivered by the forceps; this sho likewise be ready, also the perineal instrume and sutures.

Embryotomy.—A still further operation for delivery of the child is that in which mutilatio resorted to in cases in which the child is de This may be carried out by perforation of child's head, followed by delivery by means crushing the head, or by decapitation or severa of the child's head from the body. The te Embryotomy, generally speaking, means an ope tion which has for its object the reduction of volume of the fetus by mutilation.

It is readily seen that the mutilating operati upon the dead child are confined to very exceptio cases. It is sufficient to say that in all such ca after the removal of the fetus, any suggestion what has transpired should be kept from mother. It is also well to remind the nurse that

With the improved surgical methods of to-day it is only in rare cases that the child's life need be destroyed. Cesarean Section takes the place of embryotomy in many cases where the latter has been resorted to. Embryotomy is usually carried out when the head presents, as noted above, by perforating the latter with the perforator, a spear-shaped instrument which is meant to be driven into the child's head and whose extremity is separated by separation of the handle of the instrument, thus breaking up the skull and giving a means of exit for the brain. In this way the size of the head is reduced. It may be necessary to apply to the child's head the cranioclast or cephalotribe—forceps-like instruments used to crush the head and to extract it. These instruments are mentioned in this connection in order that the nurse may be familiar with them in case she may be called upon to prepare the operating outfit. The

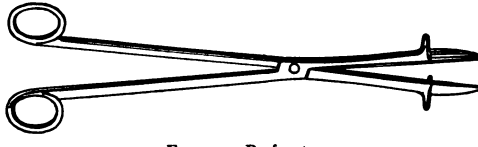

FIG. 43.—Perforator.

general preparation for all such operations is the same as that for instrumental delivery.

Operations following Delivery.—The operations which are resorted to for the purpose of restoring the mother's parts are: first, the removal of the retained placenta and membranes; second, the repair of laceration of the cervix; third, the repair of laceration of the perineum.

Retained Placenta.—Should the placenta be adherent, the operator may remove it, either by introducing his hand within the uterus and peeling it from its attachment to the uterine wall, or by the

use of placental forceps. In every case the retention of the placenta usually means hemorrhage from the womb. Therefore, in such cases the nurse should provide not only placental forceps, tenaculum-forceps, and Sims' speculum, but she

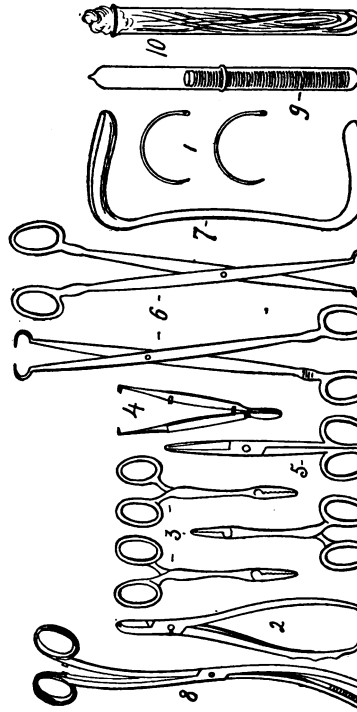

FIG. 44.—Instruments used in repair of laceration of cervix and perineum: 1, Curved needles; 2, needle-holder; 3, hemostats; 4, tissue-forceps; 5, scissors; 6, tenaculum-forceps; 7, Sims' speculum; 8, dressing-forceps; 9, catgut sutures; 10, silkworm-gut sutures.

should have at hand hot sterile water for douching, ergot, hypodermic needle, and abundance of sterile gauze in strips for packing the uterus and vagina.

A deep *tear in the cervix* is one of the frequent causes of hemorrhage after the child is born. Where the tear has extended high enough to involve the artery which supplies the cervix, this hemorrhage may be very extensive. It will be necessary, in such instances, to introduce sutures to bring the tear together and stop the bleeding.

FIG. 45.—The usual appearance of a laceration of the perineum following labor.

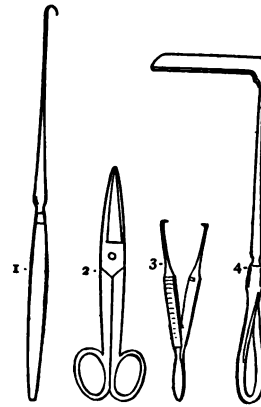

FIG. 46.—Instruments to be prepared for removal of perineal stitches: 1, Tenaculum-hook; 2, scissors; 3, tissue-forceps; 4, narrow vaginal retractor.

For this operation the physician will need curved needles and needle-holder, two or three hemostats, tissue-forceps, scissors, two tenaculum-forceps, Sims' speculum, dressing-forceps, and catgut sutures. In every operation where catgut sutures are used they should not be removed from either the glass tube or sterile envelope until they are required for use. If the glass tube which contains a roll of catgut sutures is broken it should be held within a sterile towel in the nurse's hand. In this way, when the glass is crushed, the nurse's fingers are protected. When the catgut is removed from the

envelope or tube it should be placed for a moment before it is used either within the folds of sterile gauze or of a sterile towel. Sometimes it can be immersed in alcohol. Of course for the operation of stitching the cervix the nurse should have ready bichlorid solution, sterile water, and plenty of gauze sponges. This operation is called *Primary Trachelorrhaphy*. The term Primary is used because the operation immediately follows labor, in contradistinction to the operation which is performed after the patient gets up.

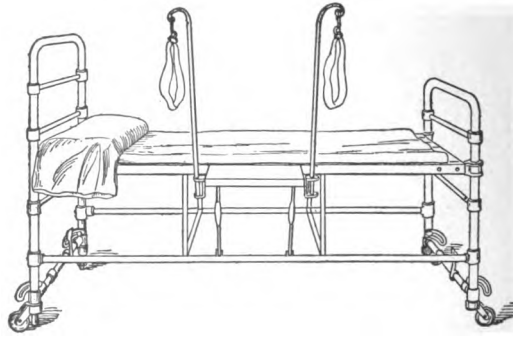

FIG. 47.—Delivery bed and operating-table combined.

In *laceration of the perineum* following labor, catgut and silkworm-gut sutures are used. In this operation the same set of instruments is used as in Trachelorrhaphy, excepting the Sims speculum and the sharply curved needles used especially for the cervix; the tenaculum-forceps may also be discarded. This operation is called Primary Perineorrhaphy.

To make a clean field for operation it will be necessary, after all the clots and vernix, which have collected about the vulva, are removed, to trim the hair covering the labia with scissors.

CHAPTER XVI

PRECIPITATE LABOR IN THE ABSENCE OF THE PHYSICIAN

THE nurse will sometimes find herself alone with the patient at the beginning of labor, when the pains may be so severe that the patient cannot be left alone. This may happen through ignorance on the part of the patient as to the early symptoms of labor, or with intention, where the patient shrinks from examination. Such women may be able to conceal the early or even the severe pains of labor to a surprising degree. On the other hand, labor may be rapid, owing to the natural ease of childbirth in certain women. The woman's pelvis may be large, and the soft parts easily dilatable through previous labors. Her efforts in expelling the child may also be unusually strong.

The patient may be seized with expulsive pains while she is out of bed, in fact, she may be in such situation that the sudden expulsion of the child would point to the danger of dragging on the cord by the weight of the infant as it is born. Traction of the cord may result. Inversion of the uterus, that is, the dragging of the inverted uterus into the vagina, may also occur.

If the patient is in the sitting posture when seized with pain, the nurse should insist upon her getting into bed. During the actual expulsion the woman must be urged to abstain from bearing down. As far as possible the bag of waters should be protected from rupture. As the head makes its appearance, the perineum should be protected

by the nurse's outstretched hand applied so
the head escapes between the thumb on one
of the distended vulva and the fingers on the ot
As soon as the head is delivered the cord, if wo
about the neck, should be drawn upon and slip
over the head. The perineum should be a
protected as the shoulders and buttocks
expelled. The infant is placed on the right
and in such position as to obviate traction on
cord. The latter is immediately cut after l
tion. The nurse keeps her hand lightly app
to the fundus.

As to the expulsion of the placenta, the ph
cian is usually at hand by the time this is necess
Where the delivery of the placenta is left to
nurse, she should, after an interval of twe
minutes, urge the patient to bear down. If
is not successful, the nurse, with her hand gra
ing the fundus and compressing it, should p
downward in the direction of the pelvis (Cre
method of expulsion), being careful to av
traction on the cord.

Following the expulsion of the placenta
uterine surface of the latter and the membra
after being rinsed in water, should be very ca
fully examined, to detect any absence of tiss
The placenta should be kept for the physicia
examination.

Perhaps the most important consideration
the nurse's conduct of precipitate labor is
observance of strict asepsis, both as to the nur
hands and as to the vulvar region. Vagi
examination by the nurse should be avoided

CHAPTER XVII

ABORTION AND MISCARRIAGE

THESE terms are used to designate the accidental discharge of the embryo or fetus, according to the period of gestation in which it occurs; if before the end of the third month the term abortion is used; if after this, miscarriage.

The prominent symptoms are pain and bleeding. The nurse should take seriously any complaint of pain in pregnancy. She should note the character of the pain, which in the beginning is colicky, felt in the pelvis, and frequently referred to the back. The fact of its recurrence is most important. Bleeding also, however slight, is important, as it may denote beginning trouble, whether accompanied by pain or not.

The patient should be put to bed at once, and the physician should be notified. The nervous fright which some women suffer from should make it imperative that the nurse avoid questioning the patient too closely or exaggerating the symptoms. On the other hand, certain women do not appreciate the importance of their symptoms, so that they may unintentionally conceal the fact of bleeding or pain.

In the average case the symptoms are not threatening, but in certain instances the hemorrhage may be alarming from the first. The treatment of hemorrhage is described elsewhere.

Nothing that may stimulate the pelvic circulation should be given: no hot fluids, for instance, nor purgative medicines. As measures to meet the emergency a teaspoonful of paregoric in water may

be given to allay pain and an ice-bag placed over the fundus of the uterus to counteract the bleeding.

All the napkins should be kept for inspection and any shreds or flesh-like particles should be carefully preserved for the physician's inspection. The nurse should be able also to describe to him the amount of blood passed in the beginning, as well as the color of the discharged blood.

Whether the discharge of the ovum has been accomplished naturally or through removal by the physician, the possibility of a remnant of decidual or placental tissue remaining within the uterus is present. This gives rise either to bleeding or infection. The nurse should, therefore, report the presence of blood following abortion or miscarriage, and she should be on the lookout for symptoms of infection—rise in temperature, chill, and rapid pulse.

As a rule, curetment is necessary to complete the removal of attached portions of the ovum. This is a minor operation, but it conveys the risk of infection more pronouncedly than other operations of a graver character, for the reason that most women at the time of an abortion or miscarriage are prone, in an exceptional degree, to infection.

Therefore, if time permits, the patient should be carefully prepared for operation. She should have all her soiled clothing removed, for women are frequently seized with hemorrhage while they are about in the ordinary course of their daily life. The patient should be dressed in her night-dress. The feet should be protected, as in all pelvic operations, either by sterile leggings or by stockings, if the patient is cared for in her home. A clean room with good light and accessibility to the bath-room should be selected.

The patient should be placed upon a table with a Kelly pad beneath her hips. The necessary instruments are: leg supporters, Sims' speculum, dilators,

dull and sharp curets, tenaculum-forceps, placental forceps, uterine dressing-forceps, and uterine douching catheter (Fig. 48).

The actual preparation of the room, arrangement of the surroundings, and disinfection of the instruments are described in Chapter XV.

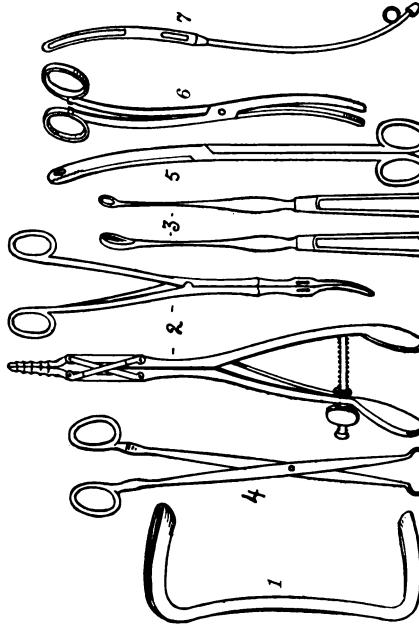

FIG. 48.—Instruments used in curetment following abortion: 1, Sims' speculum; 2, dilators; 3, sharp and dull curets; 4, tenaculum-forceps; 5, placental tissue-forceps; 6, dressing-forceps; 7, uterine catheter.

The nurse should, in particular, be informed of the possibility of hemorrhage occurring after curetment; usually the removal of the remnant of tissue within the uterine cavity causes the hemorrhage to cease at once, in exceptional cases, however, there may be free hemorrhage, which

may require hot douching and packing. Plenty of sterile hot water should be at hand, as well as strips of gauze. Another point to be noted is that in assisting the physician in using intra-uterine irrigation after curetment the nurse should be particular to keep the end of the rubber tubing leading from the douche can from contamination, in order that when it is attached to the uterine catheter it may be as clean as possible; she should also be careful, in attaching the rubber tube to the catheter, not to handle the latter. The physician takes full charge of the catheter in handling it.

After miscarriage there is a moderate lochial discharge. It is usually without odor and disappears within a few days. Rest, attention to the bowels, light feeding, and douching, when ordered, comprise the measures for the patient's care. The patient may be allowed out of bed by the twelfth day. After curetment for any purpose the next succeeding menstrual period is apt to be excessively free; if, therefore, the nurse shall still have charge of her patient at such a time, she should see that the period is passed in bed.

CHAPTER XVIII

THE CARE OF THE PATIENT IN THE PUERPERIUM

THE Puerperium or Lying-in period begins with the completion of the third stage of labor. During the puerperium the uterus undergoes actively, although not completely, a return to its normal size. This process is called Involution.

The nurse's care of her patient must necessarily be deferred until the surroundings are set in order. In the first place, the basins, soiled towels, sheets, trays, and waste-jars should be removed; this without displaying them to the patient. The discarded protections to the bed, as well as the towels, are carried at once to the laundry and immersed in cold water until the stains are soaked out. It is a mistake to convert the bath-room into a receive-all for soiled articles. The douche-bag should be emptied and rinsed with hot water, the tube and nozzles cleaned, and the whole outfit scalded and wrapped in a sterile towel. The baby is next to be washed, and the cord dressed. The particulars of this will be taken up later.

As soon as these matters are attended to the nurse is to investigate the degree of contraction of the uterus. If she is unable to detect the fundus beneath the binder she should loosen the latter, in order to satisfy herself of the firmness of the uterus. She should next inspect the vulval pad and change it, if necessary. The first discharge from the vagina is the result of active bleeding. The blood comes from the surface from which the

placenta has been detached and from the lacerations, the result of stretching of the mouth of the womb and distention of the perineum. Soon, however, the blood becomes mixed with mucus from the uterine glands and with the broken-down remnants of the decidua. The discharge is now spoken of as the *lochia*. This is a plural noun and when used should agree in number with its verb. We should, therefore, say 'the lochia are.' If we wish to speak of the lochia otherwise, we may use the term 'Lochial Discharge.'

The early lochia, in which blood is the principal ingredient, are called the 'Lochia Rubra.' This discharge lasts for three or four days. The 'Lochia Serosa' constitute the thinnish, pink discharge which lasts until the eighth day, the 'Lochia Alba' the final thickish, white discharge.

In *changing the napkin* the nurse should thoroughly disinfect her hands, passing them through a bichlorid solution, 1 to 2000. While the patient's knees are drawn up and separated, the bed-pan or douche-pan is inserted beneath her buttocks. The fresh pads, in their sterile covering, together with the bichlorid solution and cotton sponges, are placed on a near-by chair, the seat of which has been covered with a clean towel. A waste-pan is also at hand. The soiled pad is placed in the latter, not on the floor on paper, as is often recommended. The labia are now separated and sponged from above downward. If the lochia have collected in the hair of the labia, the discharge is to be soaked off with a green-soap solution and the hair trimmed, if necessary. The presence of stitches will remind the nurse to be particular not to separate the labia forcibly, nor to catch the stitches in the cotton or gauze which is used for sponging.

As soon as the nurse finds opportunity, the *after-birth* should be destroyed, following the

physician's inspection. The clots and loose blood should be washed thoroughly away. The placenta should be lifted by the cord and placed upon an unfolded newspaper, spread with a double layer of gauze to absorb whatever moisture may be present. The newspaper should be folded over the after-birth into a compact bundle, which is tied with twine. At the first opportunity the bundle should be placed in the furnace, with a hot fire, and the after-birth consumed.

The efficiency and thoroughness of a nurse are often judged by the degree of *cleanliness* in which she keeps her patient. The latter is necessarily ignorant, to a certain degree, of how well she may be taken care of in this respect. For instance, soiled bed-pads and unclean vulval pads may be the measure of the nurse's indifference to the proper care of her patient. There should be no reason why the bed should not be kept perfectly clean. In many houses where it may not be possible to use as many freshly sterilized bed-pads as may be needed without washing them out, the nurse may find opportunity to do this if she regulates her work properly. It is she, and not the patient, who is responsible for the latter's cleanliness. The night-dress and the sheets should be kept without any stain: if the physician happens, in his visit, to detect a spot upon the sheet, for instance, his whole estimate of the thoroughness of the nurse's care of the patient is at once lowered. For the first twenty-four hours it may be necessary to change the vulval pads every hour. Later, it is well to change them not less often than every four hours.

Catheterization.—Should the patient not void urine within the first twelve hours following delivery, it will be necessary to catheterize her. Her inability to empty the bladder may come as a natural consequence of labor. In the first place,

but little urine may have been excreted. Again, the shock of labor may have paralyzed the bladder. Finally, the lacerations about the urethra, from the pressure of the child's head in its expulsion, may have caused a local sensitiveness. On loosening the binder the nurse may find the uterus displaced upward and to the right side. This will probably point to the distention of the bladder. The latter displaces the uterus upward and the natural tendency for the uterus to face toward the right side will cause it to be displaced in this direction. Before using the catheter the nurse should attempt to induce the patient to urinate. This should even be tried after a much shorter interval than twelve hours. The method usually resorted to is that of placing a bed-pan containing hot water under the patient and irrigating the vulva with warm water. If this is not successful the patient should not be harassed by further efforts. It is better to take the chance of having to catheterize the patient repeatedly than to annoy her at this time in her lying-in.

In case it is necessary to catheterize the patient the catheter should be sterilized in advance. This cannot be too carefully done. Both in the rubber and glass catheter the opening which drains the bladder is slightly in advance of the blind end of the catheter. Infecting material may accumulate at this point. Whichever catheter is used it is possible to boil either one. The glass catheter is to be preferred. The risk of carrying infection into the bladder is very great, and obstruction to the view of the urethra may easily arise from the swelling around it after labor. The nurse will also have to be more or less expert in handling the basins containing cleansing and disinfecting solutions, to guard against contamination. The genital region must be thoroughly exposed. For this purpose the nurse should induce the patient

to draw her knees well up and relax herself, as much as possible, by separating them. The vulva must be exposed to a good light. A mild bichlorid solution and a package of sterile cotton sponges should be at hand. The nurse's hands, after arranging the basins, bed-clothes, and light, should again be disinfected and passed through a bichlorid solution. The vulva is cleansed with tincture of green soap and sponged with bichlorid solution. The catheter is now taken from the basin or bowl in which it has been sterilized, and lubricated with vaselin from a fresh tube. In hospital practice small

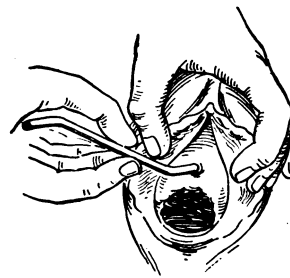

FIG. 49.—The use of the catheter.

sterilized tin jars of vaselin should be used, a fresh one for each catheterization. While the nurse separates the labia with the thumb and first finger of her left hand the catheter is introduced, following the direction of the urethra.

It is useless to attempt to enter the urethra unless the nurse is sure of finding the opening. This means that she should separate the labia well up toward the pubic region, and that she should have light enough upon the part not to mistake the folds of the mucous membrane or one of the small areas of laceration for the orifice of the urethra, remembering always that the opening occupies a central position below the clitoris and three-quarters

of an inch from it. The urine can be expressed by making gentle pressure over the bladder, at the same time watching the flow of the stream from the catheter. As this diminishes and becomes interrupted by the jerking contractions of the neck of the bladder the catheter should be withdrawn, in order to leave some urine within the bladder.

In using the glass catheter in withdrawing it the point of the first finger can be placed over the open end of it, so that the remnant of urine within the tube of the catheter is held in place by suction. This will prevent the few drops within the catheter from wetting the patient or pad.

If perineal sutures have been introduced they should be carefully irrigated by warm bichlorid solution and the surrounding area carefully dried after each catheterization. A fresh vulval pad is now applied.

The patient is not likely to have her bowels opened naturally for the first few days following labor. By the end of the second day or the beginning of the third, depending practically upon the hour of delivery, that is, as to whether labor has occurred in the day or night, this should be provided for. There are various things that can be used, the choice of any one of which depends upon the physician's wishes. Small doses of calomel, amounting in total to 1 gr., and given at intervals of one or two hours during the second day, followed by the effervescent solution of citrate of magnesia, are most effective. The magnesia should be given in divided quantities, half of the bottle on waking in the morning and half one hour after the morning nourishment. If the magnesia is not preceded by calomel it usually distends the intestines with gas, much to the patient's discomfort. Should this be the case she may obtain relief by an enema of soap and water. Should the patient have had a more or less exten-

sive tear of the perineum her bowel should be emptied on the third day by a soap enema to which is added an ounce of sweet oil thoroughly stirred with the soap and water. Castor oil is among the best laxatives, to be given on the third day in a dose of 6 dr. to which is added either an ounce of hot, strong, unsweetened coffee or ½ oz. of whiskey. The nurse should remember that an interval of about four hours elapses between the dose of oil and the evacuation resulting from it, although the oil may act more promptly. It should, therefore, be given so that the patient will not be disturbed at night. The patient will usually remain constipated during the puerperium; she should, therefore, be given a daily enema or 1 dr. of compound licorice powder in a half glass of water at bed-time. If other laxative drugs are used they should be selected by the physician, as the vegetable cathartics may cause the infant discomfort from their effect upon the nursing mother.

The patient should use the *bed-pan* during the time in which she is in bed, that is, for fourteen days following the completion of her labor. Toward the end of this time she may rebel at the discomfort which this may entail. It is, however, unwise to allow her to use the commode or to evacuate the bowels in a sitting posture until after the period in which she has been allowed to be in a semi-upright position in bed. She should be carefully irrigated after each movement.

Should it be necessary to insert deep perineal sutures, there may occur a swelling of the veins about the anus or opening of the bowel. Sometimes, simply the pressure the result of labor, may be followed by a swelling of these veins. Such swellings are in the nature of hemorrhoids. They may give the patient a great deal of discomfort, but she may be assured that they will disappear

promptly; they seldom give the patient any annoyance after the ninth day. Fomentations of boric acid applied on a gauze compress, or witch-hazel applied in the same way, will usually give relief. A simple ointment such, for instance, as cold cream, may be soothing.

In a normal case *douching* is not necessary until the third or fourth day, when the lochia begin to have a disagreeable odor. Some physicians advise early systematic douching in cases where perineal stitches have been introduced. It is probably just as safe to rely on careful irrigation until the third or fourth day. The nurse should understand that douching carries with it certain risks. They are: first, the danger of carrying infecting matter from the outside into the vagina, where it may be absorbed through the abraded surface of the mucous membrane; second, the possibility of introducing air, which will find its way into the uterus, resulting in an air embolus entering the circulation, with fatal consequence.

The nurse should, therefore, use great care. In the first place the douche-bag, tube, and nozzle (preferably a glass one) should have been boiled. Secondly, the nurse should use as much care in inserting the nozzle as in using the catheter. She should separate the labia, observing the direction of the vagina, and inserting the nozzle without permitting it to come in contact with external surfaces. She should always allow the solution to flow more or less freely from the point of the nozzle as the latter is inserted. By this means air will be excluded. It is really better to use a douche-pan, and it will pay the patient to go to the additional expense of obtaining one for her outfit. The convenience of its use lies in the fact that the douche-pan will hold the full quantity of fluid as it runs out of the vagina, without wetting the bed. The surface of the douche-pan on which the

patient rests should be protected by a sterile towel. Both the urinary catheter and the glass douche nozzle, after use, should be cleansed, boiled, and kept in a strong bichlorid solution until the time for using. The temperature of the solution in the douche-bag or can should be 108°. This means a comfortable warmth of the solution by the time it is passed through the tube and nozzle. It is always well for the nurse to test the warmth of the solution at the point of the nozzle. A mild solution of creolin, 30 drops in 2 quarts, makes a comfortable douche for the patient. Creolin has a deodorizing effect and is antiseptic. Other solutions which are used are lysol, synol, carbolic acid, bichlorid (never stronger than 1 to 4000), and permanganate of potash. Gentle compression over the fundus of the uterus will cause any undue amount of fluid left in the vagina to be expelled. The nurse should frequently look at the douche-can or bag to see that it does not empty too rapidly. Otherwise air, in this way, might find its way into the vagina. A daily douche from the fourth day on until the patient rises from bed, usually adds to her comfort. The douche-nozzle should be lubricated by a sterile lubricant before insertion.

The patient's *temperature* should be taken every four hours, except at night, during the first ten days of the puerperium. A record of this and the rate of pulse and respiration should be kept. The temperature chart should be kept out of view of the patient. A record of nourishment, of the number of bowel movements, the quantity of urine passed, the amount of sleep, and the occurrence of noteworthy symptoms should also be kept. The infant's temperature should be taken by rectum twice a day. A separate chart should be kept on which to record this. After ten days have elapsed the mother's temperature need be taken only twice daily, and that of the infant once. A pulse of

60 or thereabout is normal for the puerperal woman and is the best evidence of her favorable condition.

As to *bathing*, it seems best to begin with the general bath on the morning following delivery if the patient has been able to recover by resting from the strain of her labor. In fact, if the patient is restless and unable to sleep a warm bath will act as a sedative. It may be a question to be settled by the necessities of the case whether the combining of the enema, douche, and bath at one time in the morning is wise. Fortunately, for the first few days after labor the douche may be omitted, and by the time it becomes necessary to give a daily enema the patient will be strong enough to bear all. Under most circumstances, however, a morning bath is preferable to one given in the evening. System and despatch on the part of the nurse will help greatly in carrying out the patient's toilet comfortably. Loitering over the bath is exasperating to the patient and may result in exposing her to chill.

The puerperium is a time of convalescence, and, in order that the patient may regain her strength as well as escape the ill-health that follows a poor getting up, she should be *kept at rest.* Immediately after confinement the risk of turning in bed is considerable. By sudden turning it is possible to admit air into the vagina. It is thus possible for the air to find its way into the open veins or sinuses of the uterus and finally reach the heart through the circulation, causing sudden death. Sudden turning may again dislodge one of the clots which form in the uterine openings of the sinuses. This will lead to an arrest of the blood-clot in some portion of the circulation, either the lungs or the heart—if in the first location, with serious consequences, in the second with sudden death. Hemorrhage may also follow turning in bed

within the first few hours. If perineal sutures are in place, turning may disturb them; as a consequence the perineal wound may later refuse to heal.

For all these reasons the patient should be induced to keep on her back for from four to six hours after delivery. In some instances it may not be possible to obtain the patient's co-operation in restraining her. It is then advisable to bind her knees with a towel folded lengthwise and pinned in place with safety-pins.

If the patient should become composed after labor and go off into a doze the nurse should welcome this as a favorable sign. It is best that the patient should rather court such composure, and everything that the nurse can do to favor it should be thought of. Her surroundings should be kept as quiet as possible and the baby should be taken to an adjoining room. The nurse should not be tempted to allow the members of the family to converse with the patient. Should the patient inquire for her husband or any one especially near to her she should be cautioned against a prolonged interview. These restrictions, as far as practicable, should be carried out until the patient is past the disturbance due to the beginning of nursing.

The patient is apt to be troubled by *painful contractions of the uterus* coming on a few hours after labor. In the majority of instances they are due to a wave of muscular contraction incidental to the return of the uterus to its original condition. In other instances they are due to the accumulation of clots within the relaxed uterus. The nurse should, therefore, make herself familiar with the degree of uterine contraction by palpating the uterus, should after-pains be present, in order to exclude the possibility of clotting. These pains, when due to simple contraction, are more troublesome in multiparous than in primiparous women.

They are difficult to control by drugs, although the patient may be assured that they will disappear. They are especially noticeable after the use of ergot following labor. As far as the nurse's care is concerned, she can usually make her patient comfortable by removing the safety-pins holding the binder and by giving a hot douche, provided she has permission for the latter from the physician.

Women vary much as to their *desire for food.* It is not uncommon for a patient, apparently after an exhausting labor, to desire nourishment. This desire may be gratified. At the same time the patient should set out with the understanding that liquid and semifluid diet is to be her allowance until after the bowels have moved. In fact, although the patient may be given other food after this, it may be necessary, again, to restrict her diet when the milk makes its appearance. Probably the most grateful form of nourishment, at first, especially if labor has ended in the latter part of the day, is tea; a cup of hot, weak tea with perhaps a thin wafer, should the patient desire it, will stimulate her and rest her at the same time. Should she prefer, a glass of warm milk or, for that matter, cold milk, may be given instead of tea. A cup of broth or beef tea, if there has been an opportunity to prepare it, with a piece of thin toast, may take the place of milk. On the next morning after confinement the patient may have a small bowl of oatmeal gruel with her morning coffee, if she is accustomed to the latter. Nourishment may be given every two and a half hours. This will bring it at the periods corresponding with the meal hours and half-way in the intervals between them.

After the bowels have moved the patient may be given, in the morning, an egg with buttered toast and coffee; at noon, half of a sweet-bread which has been parboiled and stewed; in the

evening, milk-toast and tea. Between her meals she should be given milk or broth. During the night when she is disturbed for nursing she should have liquid nourishment, preferably milk. At the time when the milk comes, especially if the breasts become engorged, it may be necessary to place the patient on a dry diet. Should a rise in temperature occur from disturbances in the breasts the solid portion of the diet will have to be modified. When lactation is established the patient should have a mixed nutritious diet; cereal or egg with coffee in the morning; a broiled chop, the breast of chicken, or a small portion of beef-steak with a baked potato or boiled rice at mid-day; at tea-time, milk toast, scrambled egg, provided egg has not been given in the morning, stewed fruit, and tea. Nursing women should be given from a pint and a half to a quart of milk in twenty-four hours, in addition to other nourishment. As to vegetables, their choice will depend upon the season. Fresh peas, young lima beans, asparagus, sweet potatoes, and spinach are all digestible. Beets, string beans, and fresh corn are less digestible and should only be given after the patient gets up. Acid tomatoes and condiments are apt to disagree with the baby. Fresh fruit in season may be given, using care to avoid seed fruit. Apples should only be given after being cooked in some form. Oysters at the proper season and game, fowl, especially quail, are useful additions to the diet-list. The oysters should be given raw or stewed.

The *breasts are relieved* of undue engorgement by binding them promptly after labor and by keeping them bound throughout the puerperium. The binder should be as snug as possible. It should be loosened at the time of nursing and when the patient is bathed. A freshly washed binder should be used each day. The breasts should be sponged

with alcohol every time the binder is loosened during the stage of engorgement.

The *nipples* are protected from the occurrence of fissures or erosions by washing them thoroughly before and after each nursing with warm boric-acid solution and by dusting them with powdered acetanilid or with boric acid, powdered. The dusting powder is kept in place by a double square of gauze over the nipple, held in place by the binder. The powder should be thoroughly removed before the child nurses.

The patient should be pillowed up or allowed to have the bed rest on the tenth day. She may sit up for fifteen minutes in the forenoon, after she has rested from her bath, and again for a half hour in the evening. On the next day she may be propped up for a half hour in the morning and an hour in the latter part of the day. By the twelfth day she may be moved to the couch for two hours and then put to rest in bed for the afternoon, being propped up for her tea. She should not leave her bed for the chair until the fifteenth day except in hot weather, when the bed becomes uncomfortable, or unless the confinement in bed appears to invalid her. Under these circumstances she may get up a day or two earlier.

After the fifteenth day the patient should leave her bed each morning following her bath, and should remain in the chair until early afternoon. From three to five in the afternoon she should be undressed and put to bed; the room is to be darkened, and the patient left to herself with the object of inviting complete rest. This should be followed until the end of the fourth week.

The binder is of little use after the patient has left her bed. She will get more support from an old, loose corset than from either the binder or any form of loose waist. She is thus loosely clad with no pressure about the waist. A corset will give

support to the breasts, especially if they are distended and weighty. To suit the requirements of nursing the corset can be cut out in front. The patient's back will also be relieved by the support of a corset.

By the twenty-first day the patient may be permitted to walk about the room. Gradually, thereafter, she may be allowed more freedom, and at the end of the fourth week she may be helped downstairs. She may go out in the fifth week.

The nurse should be guided in the management of this stage of the puerperium by the absence or return of the lochia. If bleeding occurs after the patient rises it is a positive indication of the need of rest.

Douching may be continued regularly for three weeks after labor. From then on it should be carried out intermittently, say three times in the week.

During the middle and latter period of the puerperium the patient should be kept as much as possible on her side, in order to prevent the backward displacement of the uterus, which, on account of its weight, is apt to sag in this direction. As the uterus becomes reduced in size and depleted of the excessive amount of blood which more or less characterizes the early stage of involution, this tendency will cease to exist.

CHAPTER XIX

THE MANAGEMENT OF UNFAVORABLE CONDITIONS IN THE PUERPERIUM

As soon as labor is completed the woman enters the puerperium. She is subject from this moment to the ills that may beset her from unfavorable events. Many of these are trivial or perhaps not more than inconvenient to the patient. Others are grave, taxing the nurse's ability and skill.

Sudden Failure in Uterine Contraction.—This is spoken of as acute subinvolution. The nurse may find, when she returns from her attentions to the baby, that the pad and underlying sheet are saturated with blood. In feeling for the fundus of the uterus she may find that it is impossible to detect the uterine body, a characteristic flabbiness of the lower abdominal region revealing an absence of contraction. Therefore, the two symptoms just mentioned are characteristic of acute subinvolution—hemorrhage and relaxation of the uterus. In many instances this is but a temporary condition and the bleeding ceases abruptly. The nurse, however, should not accept this as a certainty, but she should act with the possibility of hemorrhage in view.

Usually the physician leaves the nurse with directions as to the administration of ergot in case of necessity. She should, therefore, give the quantity ordered, 1 dr., usually of the fluidextract, diluted. The binder should be left unpinned while the nurse attempts to rub the uterus into contraction by massage of the fundus. Should the uterus fail to contract and the bleeding continue she should give a hot douche at a temperature of 110°.

After the uterus contracts an ice-cap, filled two-thirds with broken ice and wrapped in a light towel should be applied over the fundus. The nurse should then communicate with the physician, in order to report the patient's condition and receive instructions. The nurse should remember that sudden relaxation of the uterus following labor may be without any symptoms which might cause the patient to realize her condition. It is only by inspection that the nurse may be able to detect the trouble. She should, therefore, leave her patient as little as possible and never without inspecting the napkin.

Eclampsia following Delivery.—Among the early accidents following labor is the occurrence of convulsions. Such an accident is especially hard to deal with, inasmuch as the course of labor in such cases is not likely to give any indication of trouble, and yet so-called postpartum eclampsia is not rare. Although the attack may be marked by a single convulsion this is not always the case, and at the best the succeeding complications or, properly speaking, the sequelæ, such as fever, inaction of the kidneys, and mental disturbance, make it incumbent upon the nurse to be particularly watchful of her patient. In fact such a patient should be absolutely restricted in the matter of excitement. She should not be fretted by early attempts at nursing the child, and she should be absolutely undisturbed by any one visiting her. The diet should be restricted to milk until such time as the disturbance in the breasts may make it necessary to discontinue it. The physician's orders in these respects should be carried out unfailingly. As to the actual treatment of the convulsion the reader is referred to the section on eclampsia in a previous chapter (page 69). Probably the most important point in management is the observation of the amount of

urine passed. For this purpose the urine should be measured, both in the event of the patient passing urine herself, or of her being catheterized.

Septic Infection.—There are various conditions due to septic infection, some of which are of short duration and of minor severity; the most severe form, on the other hand, which is spoken of as Septicemia, is a serious complication which often ends fatally. The mild form of septic infection is spoken of as putrid intoxication. It is the result of the decomposition of unabsorbed material within the uterus. It produces that symptom which is common to all forms of septic infection, namely, fever.

The nurse should be on her guard against the occurrence of putrid intoxication in cases where the child has remained lifeless within the uterus some time before labor; also in cases in which any shred of membrane or decidual tissue has been left. Where she knows her case to be of this class she should watch for the usual symptoms occurring in intoxication. The symptoms are: rise of temperature, with or without chill; fetid or foul-smelling lochia; and a tendency to subinvolution. Together with such disturbances the patient will have a quick pulse and coated tongue. She will very likely have headache and will complain of a general feeling of illness or discomfort. These symptoms are all to be found in septicemia as well, but the great difference in the two conditions is that in septicemia suppression, instead of fetor of the lochia, occurs. Moreover, in septicemia the symptoms become active at once, and the patient shows the pallor and anxiety of countenance which bespeak a serious illness.

The nurse will be responsible for the observance of the early symptoms in either one of these affections, as she will be the one having the greatest opportunity to observe the case in the beginning of

any trouble. The points, therefore, which have been mentioned in reference to the diagnosis are important for her to study.

In either case the question of treatment must necessarily be left to the physician. As far as the nurse's management is concerned, it will be proper for her, where she finds a temperature exceeding 102°, to promptly sponge her patient, observing the precautions which are necessary to prevent chilling. She should place the patient between warm blankets, after her night-dress and binders have been removed, in a room of proper temperature, and sponge with water at a temperature varying from 95° to 100° according to the degree of bodily temperature, drying carefully after sponging the body in sections. The patient should be well covered after the bath, and if there is the least sign of chilliness she should have a hot-water bag at her feet. In addition to this the nurse may repeat the douching which has probably been already ordered by the physician. For restlessness and pain in the head the ice-cap may be applied. Other details in treatment should be left entirely to the physician.

Another form of septic infection is that in which a localized development of septic poison results in inflammation of a particular region—parametritis. The region most commonly affected is that in the neighborhood of the uterus, either to one side or behind the latter. There is usually some swelling, not infrequently enough to produce a mass large enough to be detected by palpating the abdominal wall. Should the nurse in bathing or arranging her patient discover any resistance in the pelvic region from swelling she should report it at once. Tenderness in the region of the lower abdomen and pain when the patient urinates, or when in the act of moving the bowels, is often due to an inflammation of this character. The nurse should at

least not discount or, in other words, not disregard the symptom of abdominal or pelvic pain in the puerperium. It is always a matter worthy of attention and should always be reported.

The origin of septic infection lies in the presence of bacteria or germs within the blood current or tissues of the body, the result of invasion from some point in the birth canal. This invasion usually occurs at the time of labor or very soon after it; indeed, it may arise before labor. This is the case in gonorrheal infection, the germs which produce the latter having already lodged in the tissues, later to assert their presence by the outbreak of septic symptoms.

In this connection there are two things to be noted: first, the possible responsibility which the nurse bears in the causation of infection; she may for instance have introduced an imperfectly sterilized douche nozzle into the vagina or have touched the genital region without having properly sterilized her hands. A frequent lapse in technic is that of handling, in the midst of the excitement arising from emergencies, the patient or her immediate surroundings hurriedly. In hemorrhage, for instance, there is so little time to act deliberately that it may be absolutely impossible for the nurse to handle her patient aseptically, and yet it is this very class of patients in which septic infection is apt to occur.

The next point to be considered is the contagiousness of septic infection, especially in regard to the liability of the nurse herself to infection. Septicemia is a prolonged illness requiring unremitting care in nursing. Such a case will require, where possible, two nurses; but whoever comes in contact with the discharges and excretions of the patient is liable to infection under certain circumstances. If the nurse should have, for instance, a cut in her finger or any abraded surface of the skin,

it might prove the point of entry for the poison. On the other hand, the physical depression which comes to the nurse through the prolonged nursing reduces her power of resistance to infection.

In caring for such patients, therefore, the nurse should obtain her required rest as far as possible, as well as a daily outing, which gives her not only the necessary change of air, but relief from the depressing surroundings of the sick-room. It is almost unnecessary to add that the patient should be handled with scrupulous attention to asepsis and that every detail of disinfection should be carried out. This means frequent disinfection of the nurse's hands, cleanliness of the bed and bed-pads, care in bathing the patient and keeping her supplied with fresh gowns, the boiling and airing of the bed-pad, douche-can, basins, and all utensils in use, the frequent airing of the sick-room, and cleansing of the latter, observing scrupulously the rule that no dust should be covered. Thus the nurse should remove the bed-rug and have it beaten and aired. She should, every third day, go over the carpet or floor with a broom mop, the covering of the broom slightly moistened with a bichlorid solution; she should see that the wash-boards and wood-work and the inner surface of the window panes and sash are wiped down. The room should be dusted every day, all unnecessary fabrics, such as curtains and covers, having been removed. Fresh towels should be spread on the bureau and tables.

In hospital practice such cases are isolated, the nurse is confined to the isolation ward with her patient, and the dishes and utensils are washed separately from those in use by the other patients. Under all circumstances the bed-linen and towels are immersed in carbolic-acid solution and washed by themselves.

The infant should be brought to the mother as

usual to nurse, unless in true septicemia the exhaustion of the disease contra-indicates nursing. The supply of milk, however, is usually restricted, owing to fever. The infection is not likely to spread to the child.

Lastly, a form of infection which appears late in the lying-in period, often in the third week, is that which produces obstruction in one of the vessels of the thigh or leg. It is spoken of as *Phlegmasia Alba Dolens*. This somewhat elaborate Latin term means, literally painful white swelling. The earlier observers described it as 'Milk-leg.' Although the general symptoms of infection are present in the beginning, such as chill and fever, pain is the most pronounced symptom. Very often the nurse will recognize the trouble by discovering the drawn-up position in which the patient holds her leg. On questioning her the nurse will draw from her an acknowledgment that she is suffering. The treatment for this affection is well defined, although the physician will allow the nurse latitude in following out any measure that will bring comfort to the patient. Elevation of the foot with support of the leg on pillows is always indicated. Warmth, as, for instance, from wrapping the leg and thigh in absorbent cotton, is useful. Hot-water bags may be necessary, applied along the course of the vein (the inner part of the thigh). The application of ice-bags, on the other hand, has been recommended. The temptation on the nurse's part to rub the thigh should be restricted, as in the early stage it not only increases the trouble, but adds to the patient's suffering.

The affection disappears slowly and usually results in a more or less chronic swelling.

Retention of Urine and Constipation.—Should the urine not be voided the bladder becomes distended and pushes the uterus upward out of the pelvis. Therefore, the condition can be readily

ascertained, irrespective even of the knowledge that the patient has not voided urine for some time, by the presence of the fundus of the uterus high up in the abdominal cavity. Should the nurse find the uterus in this elevated position, with perhaps some displacement toward the right side, she should not mistake it for a condition of subinvolution, but should refer to her record to see at what hour the bladder was emptied.

A distended bladder will not only add greatly to the patient's discomfort, but will also interfere with the contraction of the uterus. It is never well to take the patient's word in the matter of her desire to void urine, as she may not have the slightest inclination to do so, even though the bladder may be hugely distended. The nurse should also understand that marking down on her chart or record sheet the time of voiding and the amount of urine passed is one of the most important items in observation of the case. She should, therefore, be systematic in making these notes.

Small quantities of urine may be frequently passed and yet the distention may not be relieved. For this reason inspection of the lower abdominal region and palpation of the uterus are very important points in determining the degree of distention of the bladder.

Constipation is of common occurrence in the puerperium. The difficulty is only partially overcome by the early movement of the bowels soon after labor, as this is followed by more or less obstinate constipation, the result of inactivity in bed. The change in diet, especially the restriction of the nourishment to milk or milk foods, also causes constipation.

It is best that no laxative be given until the second day, in order that the patient may not be disturbed until she has recovered from the strain of labor. The delay or want of effect in the

action of laxative drugs often arises from the disinclination of the patient to use the bed-pan. In instances where an extensive tear in the perineum has taken place an early action of the bowels is not desirable.

Constipation late in the puerperium is apt to cause a congestion of the pelvic region and consequently produce more or less free bleeding. Where, therefore, the lochia rubra continue late the nurse should be alive to the existence of constipation as a cause of this persistent discharge.

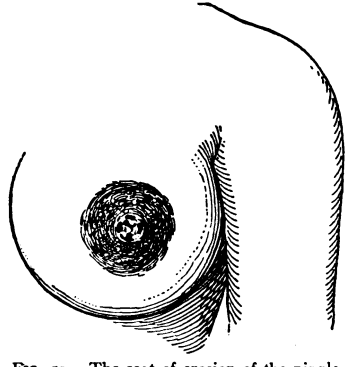

FIG. 50.—The seat of erosion of the nipple.

Erosion of the Nipples.—There is no condition confronting the obstetric nurse which shows more clearly, by the way in which she manages it, her training and skill than that arising from affections of the breasts and nipples.

The general preparatory treatment of the nipples is supposed to have been carried out according to directions previously described. The actual treatment in the puerperium is: first, prophylactic or preventive. This may best be carried out by applying to the nipples an antiseptic dusting powder such as acetanilid or boric acid,

which penetrates into the minute crevices of the nipple and prevents the invasion of the moistened delicate skin covering the nipple by the bacteria which cause inflammation. This dusting powder should be applied promptly after labor, at the time when the breast binder is first applied. Secondly, a firm Murphy binder evenly compressing the breasts prevents the undue influx of blood into the breasts and thus prohibits the congestion which is always a fore-runner of inflammation.

Should prophylactic treatment fail and the nipples become actually fissured or eroded they must be protected from irritation by the nipple shield. It is a mistake to postpone the use of the nipple shield, as the erosion progresses rapidly to the point where bleeding occurs. The pain and nervous agitation which the patient suffers when this point is reached will suppress her milk and so alter its quality as to make it uninviting to the infant. Besides this, if the baby is vigorous, he will in his hunger seize the nipple and saw on it with his gums, causing an erosion at the base of the nipple which will penetrate deeply and heal slowly. It should be noted that even the smallest fissure must, of necessity, go through the stages of healing common to any other ulcerated surface—namely, erosion, granulation, and final healing. All this takes time, and unless the nipple is properly taken care of each step in the process will be delayed and the final healing will be put off indefinitely.

The best nipple shield is that with a glass bell and detachable nipple with bone disk. The shield should be boiled after each nursing and should be allowed to soak in boric-acid solution during the intervals. It is well to have two shields which can be used in rotation.

The shield should first be dipped in heated water and then carefully applied after cleansing

the surface of the breast, so as to avoid irritating any fissured point at the base of the nipple. The breast may be gently massaged toward the nipple in order that the milk may appear within the shield before the child suckles. This prevents the baby drawing in air.

Applications of nitrate of silver, painted on with a camel's hair brush, or strong solutions of permanganate of potash are used to favor healing. Ointments are also soothing and are often prescribed. If the latter are used the nipple should be cleansed with hot water and soap before the succeeding nursing.

Engorgement of the Breasts.—This condition, spoken of as caked breast, usually makes its appearance on the second or third day and precedes the actual secretion of milk. The breasts become swollen, tense, and painful. They increase in size to such an extent that in some instances the base of the breast may extend upward almost to the collar-bone and laterally almost to the mid-line. A slight elevation in temperature usually occurs.

The condition arises from an increased supply of blood to the breasts, the swelling being incidental to this. It is not, properly speaking, an inflammation, and differs from the latter in important respects which will be spoken of later. It is also not due to the actual accumulation of milk in the breasts, because in many instances, especially in primiparous women, there may be great engorgement of the breasts, accompanied by very scanty secretion of milk.

There is no condition in which the ministration of the nurse can add so much to the patient's comfort. The physician will probably have advised purgation by means of some saline laxative such, for instance, as citrate of magnesia, which depletes the engorgement of the breasts by the free watery evacuation which it causes. The

patient will also have probably been placed on a dry diet; this may consist of toast, minced chicken, a small quantity of thinly sliced dried beef with bread, raw oysters, and stewed fruit. The patient should receive none of the milk-producing foods, such as milk, tea, cereals, and cocoa.

Massage of the breasts is usually advised. In the writer's opinion, however, firm, even pressure is more useful. If massage is resorted to, it should be carried out by kneading the breasts from the base upward toward the nipple with the extended fingers of one hand. This should be followed by compressing the base of the breasts held within the grasp of both hands and gradually working upward as the hard areas at the base begin to yield. The use of cocoa butter will be more soothing to the patient than the bare hand, as it makes the manipulation less harsh. Camphorated oil may be used instead. The breasts should be cleansed with soap and warm water before the massage is begun and gone over gently with alcohol to complete the treatment. It is well to remember, however, that engorgement of the breasts cannot be removed by any single attempt at massage. The swelling must disappear gradually, and the better treatment is that of supporting the swollen breasts and compressing them by the use of the binder in order to favor the exclusion of the excessive amount of blood.

Should the breasts become intensely swollen, a fomentation prepared as follows may be applied: A square of absorbent cotton, cut to leave an opening for the nipple, may be spread upon a towel and thoroughly sprinkled with a hot solution of boric acid; the cotton is then applied to the breasts, covered with oiled silk, and kept in place by a firm binder or a figure-of-eight bandage, leaving space for the nipple to protrude. If the bandage is used the breasts can be emptied by nursing or

by the use of the breast-pump without removing the bandage. If the binder is applied it should be removed at each nursing and the breast bathed in alcohol and the fomentation applied as before. The dressing should not be moist enough to leak down at the patient's side.

Where the nipples are not prominent or where the swelling is so great as to make it impossible for the child to seize the nipple the breast-pump should be used.

The "English" breast-pump is commonly recommended and in some respects it is the best, that is, it is usually dependable and will always work; it can also readily be kept clean. When, however, a great deal of suction is required a pump with a suction tube, by which the patient or nurse can draw with the lips upon the mouth-piece attached to the suction tube, is preferable. This pump, however, must be kept scrupulously clean, and it is better to substitute a piece of white rubber tubing for the thin rubber tube usually supplied. The latter dries and cracks readily and cannot be boiled.

Mastitis.—Mastitis or inflammation of the breast is an entirely different condition. It is due to the invasion of the ducts of the gland by bacteria, resulting frequently in suppuration or the formation of pus. It differs from engorgement in its early stage by being characterized by fever, sometimes accompanied by chill and local redness of the skin. The breast may or may not be painful. Later, the throbbing pain of acute inflammation is felt, and the skin becomes glazed. This degree of inflammation usually denotes the presence of pus. Instead of the breast being uniformly hard, the hardness is found at a single point, corresponding to the point of redness.

If the condition is not relieved by operation the pus finds its way to the surface and the abscess

breaks. The best treatment, however, is for the physician to anticipate this by incising the breast and freeing the pus.

Before describing the preparation for this operation one most important consideration of treatment should be alluded to; that is, the suppression of the milk. The physician will usually direct that this be carried out in both breasts. It must be done by compression and the absolute removal of the infant from the breast. The nurse will find it difficult to make the mother

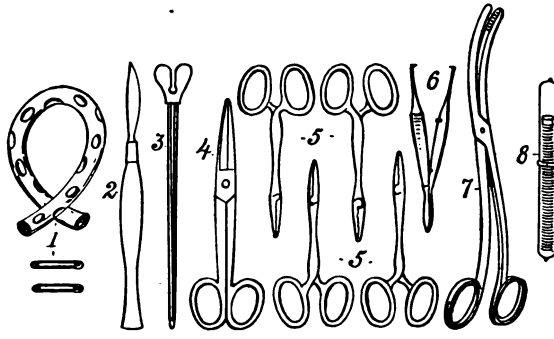

FIG. 51.—Instruments for the treatment of breast abscess: 1, Rubber tubing and safety-pins; 2, scalpel; 3, grooved director; 4, scissors; 5, hemostats; 6, tissue-forceps; 7, dressing-forceps; 8, catgut.

obey the physician's orders in this respect, but she should not yield in it, and should gently insist upon carrying out his orders. It is also to be noted that not every inflamed breast goes on to suppuration. Where the condition is recognized early and the nurse resists the temptation of rubbing the breast, reporting the condition promptly to the physician, abscess may be avoided. The early application of the ice-bag over the binder or bandage will help scatter the inflammation.

If it is decided to open the breast t
should make the following preparation; s
select a room adjoining the patient's roo
good light, and prepare a table on which t
is to lie. Sometimes a simple incision
made without removing the patient f
but in the majority of instances the
should be thorough. Ether should be
basins, a small Kelly pad, pus-trays,
scalpel, scissors, two or three hemostats,
director, catgut for ligating vessels, rubb
for drainage, and safety-pins to hold the
place.

The patient should be placed with th
side lying on a Kelly pad or a piece of m
rubber. The dressings to be used ar
plain or iodoform gauze for packing,
cotton for padding, gauze compresses, ar
bandages 2½ inches in width. A bichlori
and green soap should also be at hand.

After the operation the breast should b
daily. For this purpose the nurse shoul
hand a pus basin, antiseptic solution, fre
ings, an irrigating bag and nozzle, o
syringe.

Cystitis.—Inflammation of the blad
occur as the result of catheterization.
also occur as the result of inflammati
urethra in a previous gonorrhea. Th
toms, in the order of their importance,
with voiding urine, frequent urination,
bearing down, accompanied by chillin
appearance of mucus and, in the latt
of pus in the urine is indicative of
The course of the trouble is often p
The patient should be kept upon a mil

pain a hot-water bag should be applied over the bladder. Relief usually comes from medicines given to render the urine bland or aseptic. If it should be necessary to irrigate the bladder, the nurse should prepare the following: a glass funnel, rubber tubing, a glass connecting-tube, to be inserted between sections of the rubber tubing in order to make it possible to detect the presence of air in the tube, a glass catheter. These should all be sterilized. The solution for irrigation will be designated by the physician.

Insanity.—A puerperal woman may show evidences of insanity in the first few days following labor. The mental excitement which she suffers may in many instances be due to either septic infection or it may be a consequence either of eclampsia or of actual kidney disease (Bright's disease). In such cases the condition is more or less easily accounted for. In other instances there may apparently be no cause for her excitement and the nurse might readily be thrown off her guard, as far as interpreting the patient's symptoms, simply on account of the unexpected development of them.

It is well for the obstetric nurse to appreciate the fact that puerperal insanity is not uncommon, and that in primiparous women it may develop without warning. The condition usually does not develop by any sudden excitement, but comes on gradually, showing symptoms which at first might be mistaken for those of other more simple conditions.

A rapid pulse, sleeplessness, with the peculiar stare of maniacal excitement, abhorrence of food, and, especially, the fixed aversion either to the baby or to the patient's husband, are important symptoms. They should make the nurse apprehensive of the seriousness of the patient's condition.

If the patient suffers from fever the slight

delirium which is a usual accompaniment may confuse the nurse in her observatio case; in other words, the actual condition that of beginning insanity instead of deliri the fever may be the result and not the cau condition. Such a question should be cl at once and the nurse should place the res ity upon the physician by reporting the sy to him.

The nurse can help in establishing the by tactfully learning the history of the cas patient is a multipara she may have symptoms at the time of her previous con or confinements. If she is a primipara th be some history of mental disturbance family.

The majority of such cases recover, temporarily, but slowly. They require care, especially from the beginning, as the tion which follows the first developm prolongs the patient's illness should be fo by careful feeding and mild restraint. T should give her patient constant watchfu order that she may prevent the impulsiv to get out of bed or give way to sudden of excitement. The infant should be from the breast, the patient frequently fed, regularly, and protected absolutely f excitement.

Symptomatic Fever.—By the term tomatic fever is meant fever originati some minor condition, of which the elev temperature is practically the only sympt may arise from mental disturbances, cons or indigestion, due to an inactive conditio liver; exposure giving rise to cold, and

instance, if a patient is worried about her supply of milk, or if in hospital the provision for her future is doubtful on account of poverty, she should be persuaded to give up worrying over such matters. If, on the other hand, the patient is constipated, measures for the relief of this should be undertaken. So it is with indigestion and disturbances from the breasts.

We should remember that although symptomatic fever is a mild condition, yet if the fever is not allayed it will interfere with involution and the patient may have, added to the minor elevation in temperature, an actual fever due to absorption of toxic material from the birth canal.

Subinvolution.—When the uterus fails to return to its proper size, owing to want of contraction, we find by palpation a boggy, enlarged mass instead of the firm, rounded fundus which hardens under the hand when felt through the abdominal wall. This condition of subinvolution leaves the uterus with too much blood in its walls; in other words, the organ is congested. This gives rise to two conditions: first, a prolongation of the lochial discharge; second, increased weight in the uterine body. As a consequence of the latter condition the uterus becomes displaced and the mucous membrane lining it inflamed. Thus, we have in the puerperium dragging pain and bleeding on getting up, and, following the puerperium, the chronic symptoms due to displacement of the uterus.

The nurse can do much toward guarding against subinvolution: first, by keeping her patient in bed for the proper length of time after confinement; second, by seeing that she does not become constipated; third, by systematic douching; fourth, by seeing that she maintain, for some time after getting up, the daily use of the knee-chest position, should this be advised by the physician.

CHAPTER XX

THE NORMAL INFANT

THE healthy infant at birth weighs from $6\frac{1}{2}$ to $7\frac{3}{4}$ pounds. Its body is well rounded and the skin of a pinkish color, which replaces the first bluish pallor at birth. At first the appearance of lividness of the skin is increased by the vernix caseosa.

If the child's head has been subjected to marked pressure during birth it is pressed out of shape.

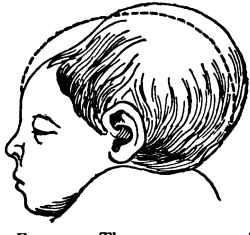

FIG. 52.—The appearance of the child's head, moulded in labor.

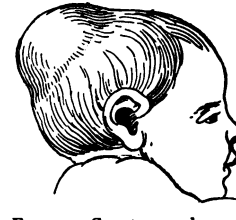

FIG. 53.—Caput succedaneum.

The occipital end of the head protrudes, giving it an elongated appearance. This is called *moulding* (Fig. 52). The moulding may be slightly irregular, as the pressure to the sides of the head may drive one or the other of the lateral bones out of place. This irregularity of shape usually disappears within a few days. The posture of the infant may modify the rapidity with which it disappears. The soft tumor which occurs on the portion of the head advancing first during labor, called the caput succedaneum (Fig. 53), will also

produce a misshapen appearance, but, like the moulding, it will disappear within a few hours. It is due to local edema of the tissues of the scalp and is likewise the result of pressure during birth.

Among the first of the bodily functions to be established are those of urination and defecation. The urine contains at first crystals due to the presence of uric acid, one of the natural chemical ingredients of the urine. The nurse will be called upon to interpret the cause of the staining of the napkin which occurs from the deposit of these crystals. The stain is reddish in color, and unless the nurse is informed of the cause of the stain she may mistake it for blood.

The discharge which first comes from the bowel is meconium. It is blackish in color and tar-like in consistency. The colostrum or first secretion from the mother's breast has a slightly laxative effect upon the child, and after a few nursings the colostrum will cause the blackish appearance of the meconium to change to the yellowish color of the infant's normal discharges.

During the first few days after birth the infant loses—from the absorption of its own fat as food to supply its needs until the milk is secreted, and from the reconstruction of its blood—from one-tenth to one-eighth of its weight at birth. By the end of the first week this is partly regained, and during the second week a gain over the initial weight is observed. The normal increase in weight after the second week should average from four to eight ounces.

Two changes in the condition of the skin show themselves in the first week of life: one is the appearance of jaundice. The skin becomes yellow and even the whites of the eyes undergo discoloration. This, when it occurs, is due to natural changes within the infant's organism and, unless extreme, should not be considered abnormal. It usually disappears without treatment in three

or four days. The other skin condit
of a rash which appears about the nec
face, and on the back and arms. It is
somewhat elevated in pointed distribu
spoken of as "red gum" and is usually
origin. If the reddish points go on to t
lation of serum within them the rash i
as "white gum." On the fifth or s
slight inflammation of the breasts occ
dren of both sexes. This subsides in
and requires no treatment. Should
become distended, a little gentle rul
cocoa butter may be resorted to. Usua
done the better.

From the time the cord is tied it be
and shrivel, without going through an in
stage and without affecting the skin s
its base except within the little circ
area called the Cuff of Skin. Wit
slight moistening of the base of the c
which rapidly dries as soon as the cord i
The separation of the cord occurs on th
In some instances this may be defer
tenth or twelfth day; infrequently the co
observed to remain attached for three

CHAPTER XXI

THE CARE OF THE BREAST-FED INFANT

THE infant at the breast is the typically normal infant. We may consider the stages through which it passes as representative of normal existence.

From an obstetric standpoint our discussion of the care of the infant comprises the period during which the nurse is likely to be with her patient; namely, until the end of the fourth week. This period exceeds what is termed the period of newborn existence. The newly born infant is the infant which still shows traces of the connection with its mother by the attachment of the umbilical cord. After the latter has been shed the infant has passed the period of newborn existence.

Certain important changes occur during this period with which it is well for the nurse to be familiar, for the reason that slight variations in these changes may denote grave possibilities. In the first place, with the beginning of respiration the opening between the auricles or fore-chambers of the heart, called the foramen ovale, becomes closed, permitting the blood to flow from the right auricle into the right ventricle and thence into the lungs, where the blood obtains its oxygen. The closure of the foramen ovale is brought about by the perfect fitting over of the delicate membrane which covers the opening. For this to occur, the pressure of the blood-current on either side of the membrane must be properly balanced. This adjustment is favored by placing the newborn infant on the right side.

In the next place, certain changes in the blood are taking place during this time. If, likewise, these changes depart from the normal, bleeding from the smaller vessels (capillaries) of cut or unprotected surfaces takes place; that is, from the end of the cord, into the stomach or intestines, and even under the skin. The nurse should, therefore, be aware of this possibility during this period, which we may speak of as that of "unbalanced" existence. Then, again, the changes in the alimentary tract, including those in the liver, subject the infant to disturbances of digestion which should be carefully observed and treated.

The nurse should, therefore, realize that her care of the infant from the earliest moment should be carried out with the possibilities before her mind resulting from these various changes. As soon as the nurse has put the mother in such condition as may permit of the former giving her attention to the baby, she should prepare the bath. In uncovering and handling the baby it may be well to see that no abnormality exists, such, for instance, as may be the result of delivery or malformation. She should also see that there is no bleeding from the cord, that the color of the skin is perfect, and that the infant breathes properly.

The first step in caring for the child consists of *cleansing its skin* of the vernix caseosa, and in bathing it. If the nurse has been able to set the surroundings of the patient in order and can give undivided attention to the infant, she can proceed at once with the bath; otherwise, the bath can be postponed until a convenient time following the completion of the mother's care.

For the purpose of removing the vernix the child is to be anointed with warm olive oil or albolene. The anointing material should be heated by placing it in a cup immersed in hot water. The nurse should begin at once to gauge the tem-

perature of the room by a thermometer, and before unwrapping the baby from the receiver she should see that the temperature of the room is above 70°. She should select a position in the room where she can have a good light, be protected from draft, and with the source of the heat in the room facing her lap, upon which the baby is placed. She should select a low chair without arms. Everything which she needs should be placed within reach before she begins to anoint the baby. If the bath follows at the same sitting the nurse should have the infant's basket containing the necessary supplies at her hand: the underclothing and slip for the baby, warmed and spread out within reach; a bath-tub, with water to the depth of 6 or 8 inches, resting on a foot-stool or low chair; an extra pitcher of hot water; castile soap; gauze wipes; wash cloth and fresh sponge; a china wash basin; a small waste basin on the floor, all at hand; and also an old sheet or piece of rubber sheeting spread at her feet. She should cover her lap with a soft bath towel or bathing blanket, from which the chill has been removed by holding it in front of the register.

By having everything prepared before the nurse undertakes the bath the risk of exposing the baby is avoided. With this same object in view the nurse should proceed with the anointing as systematically and rapidly as possible. The baby is now taken from the receiver and placed face downward across the nurse's lap, the oil or albolene is applied by the hand and smeared carefully over the surface of the body, especially into the creases of the skin, notably the groins. The blood and caked vernix clinging to the scalp are softened by the anointing of the head. After the body is thoroughly gone over the head and face are washed, either with a soft cloth or gauze wipe, using soap, but being careful to protect the baby's eyes. The head is dried quickly and protected

from draft by the edge of the bath bl
baby's body is now soaped and the in
by the nurse's left hand supporting th
and the right hand grasping the legs.
head rests upon the left forearm. T
immersed, with as little exposure as po
into the bath; the temperature of the
have first been tested with a bath therm
should range in the neighborhood of
head is kept well out of the water and
nal surface at the junction of the re
cord is kept as dry as possible. Wh
and head are supported by the left h

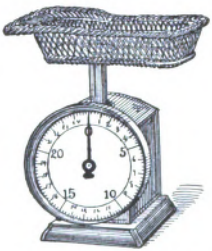

FIG. 54.—Scales for weighing infan

the surface is gently rubbed over b
right hand, and the baby quickly l
warm bath towel covering the nurs
patted, and rubbed with a soft tow
While the body is carefully covered
are thoroughly dried and dusted
powder.

After the bath the infant may be w
being dressed. In hospital practice
nient to place the infant promptly

weight. This should all take as little time as possible, and the scales should be ready before the bath is undertaken. In weighing the baby at a later period the weight of the diaper, as well as that of the wrapper, should be deducted. Basket scales are preferable, although it may be necessary to use a hanging scale. If this is done the hook catches a loop in the receiver, while the infant is held only at a slight distance from the bed or protected table, in order to guard against injury in case the hook should slip.

The *cord is now dressed.* After seeing that the ligature is secured and that no bleeding has occurred a piece of surgeon's lint is cut so that after being folded it makes a square of a little over 3 inches in each direction. This is again cut with a slit running in from one edge to the center. It is now slipped over the cord, which passes through the slit and is folded about the cord after the latter has been dusted with equal parts of salicylic acid and powdered starch prepared by dry sterilization in a glass tube, the soft side of the folded lint being next the cord. This dressing is now held in place by the baby's flannel binder. This, after being folded over the dressing of the cord, is pinned by small safety-pins fastened to one side of the middle line.

The *baby is now dressed.* The diaper is folded into a triangle. The baby's feet are grasped and lifted up while the diaper is slipped under, into position. The two side points of the triangle are folded over each groin snugly into the crotch, and the lower point of the triangle is brought upward and pinned. Where the thighs are included by the folding up of this point, a safety-pin on either side is introduced to the inner side of the thigh, to make the diaper fit snugly about the thighs, breeches-like. It is better not to line the diaper with gauze or soft material, as the ordinary cotton bird's-eye, if

properly washed, is sufficiently soft. The temptation to defer changing the infant, when the nurse counts on a soft protecting lining to the diaper, is too human to be disregarded. The clothing consists of first, a silk and woolen shirt, high in the neck and with long sleeves, which is placed over the binder; second, a flannel petticoat with a muslin body, which is furnished with shoulder-straps —bobbin tapes to fasten the body of the petticoat are perhaps best; third, a muslin slip, also fastened behind by tapes. The shirt usually buttons in front, while the slip and petticoat are fastened behind, so that the garments must be put on separately. The skirts are always drawn up over the feet instead of downward over the head. The socks are now tied on and the infant is placed upon the side in an adjoining room after having been given to the mother for her to look at, and is covered from below the arm-pits by a light afghan or thin flannel blanket.

Although the baby may usually seek the breast after its bath, the first bath is to be followed by a period of more or less prolonged rest without any attempt to put the baby to the breast.

Nursing.—During the first hours after delivery both the mother and baby should be disturbed but little for nursing. The fatigue of labor should be overcome by a complete rest, and, for the baby's part, nature's inclination toward profound rest should be encouraged.

In from four to six hours the baby may be put to the breast; after that a period, varying according to the necessity for rest on the mother's part, may elapse before the infant is again nursed. If, for instance, the mother is composed for the night, succeeding her labor, it is wrong to disturb her. The next morning, after the mother's toilet is finished and the baby bathed, the latter may be put to the breast. This will probably be the first

satisfactory attempt to nurse. The only conditions calling for earlier attempts at nursing are: first, the instinctive desire of the mother to see her infant at the breast; in some women this is so strong that it is impossible to compose them until they are gratified. Secondly, in deficient contraction of the womb (subinvolution) the act of suckling will stimulate the uterus to contract.

In most women lactation is not established until the third or fourth day. In the meantime the breasts are undergoing engorgement preparatory to the secretion of the milk. The first form in which the milk makes its appearance is colostrum. In the colostrum the minute globules of fat which are suspended in the fluid portion are not thoroughly mixed or emulsified. They, therefore, give the colostrum a yellowish appearance which is quite different from the bluish-white appearance of the milk.

After the colostrum makes its appearance, the time for which may vary after labor from a few hours to thirty-six hours, the baby should be nursed at regular intervals, usually of four hours—after lactation is established every two hours. As to night nursings, it is best for the mother not to be disturbed after ten o'clock until the early morning nursing, which should come at five o'clock. This rule should be observed from the very beginning. The infant's drowsiness, which is characteristic of the newborn period, will last long enough to make it accustomed to sleeping through the day, as well as the night. Thus, very shortly, the baby will fall into the habit of rousing in the night. If this habit is encouraged by putting the infant to the breast during the night, there will be no possibility of regulating properly the intervals of feeding, and the baby will be wakeful and fretful through the night. If, on the other hand, the nurse begins, as soon as the milk comes, to put the

baby to the breast at regular intervals during the day, the infant's hunger will be satisfied and he will sleep at the proper time. It is even better to waken the infant at the time for feeding. An infant fed in this way will obtain from eight to ten feedings in twenty-four hours.

In primiparous women it may be sometimes difficult to get the baby to nurse. This arises from various causes—the breasts may be very much engorged, without containing sufficient milk for the baby; the nipples may be very sensitive; finally, the nervous excitability into which the mother works herself from disappointment in not having a full supply for the baby will make the milk distasteful to the latter. It is here that the nurse's patience and perseverance come into play. To begin with, she should use every effort to calm and encourage the mother to be patient until the milk is forthcoming. In the next place, the nurse should see that the child is made comfortable at the breast; in other words, that the mother supports him at the proper angle, turning so that the nipple will naturally fall into the infant's mouth. The mother should be encouraged to keep her composure and not to become worried from the baby's disinclinaton to take the nipple. Very often after a little endeavor the child settles down and begins to nurse comfortably. It is worth a great deal of patient care to induce the baby to take the nipple, for if this is once accomplished and the baby is satisfied at the breast, the battle is won; whereas, if the baby is taken from the breast without having once obtained the milk he will not look upon the nipple as the source of nourishment and will only be fretted by future attempts to nurse. Sometimes it is well to pump out a dram or two of milk from the breasts and feed it to the infant from a spoon, to satisfy him in cases where not enough milk has been

drawn from the breast by the baby to give him a proper quantity. It is a great deal better to avoid a nursing-bottle altogether until the milk is fully established, as when the baby appreciates the ease with which the rubber nipple yields the supply of milk he will prefer it to the mother's nipple. (For the care of the breasts before and after nursing, see page 176.)

Difficulty in inducing the baby to nurse may arise from another source; namely, some abnormal condition in the infant. It would be useless to try to force the infant into nursing beyond a proper point without looking into the possibility of such a cause. If the tongue is tied down by a persistent frenum or, in other words, if the baby is tongue-tied; if occlusion of the nostrils occurs from syphilis; finally, if a cleft palate interferes with nursing—the attempts to keep the infant at the breast will be a failure. The nurse should never, therefore, feel sure of her ground until she has asked to have the baby examined by the physician for these possible conditions.

The mother soon becomes accustomed to nursing the baby comfortably. She should, however, be guided in certain particulars. The baby should not remain, for instance, at the breast for more than fifteen or twenty minutes at the most. If, when the baby takes the breast, the milk comes slowly gentle massage of the breast by the nurse's hand, rubbing outward toward the nipple, will favor the flow of the milk. Should the baby sleep between the efforts of nursing he should be taken from the breast. Most infants are annoyed frequently by the collection of gas in the stomach after nursing. This accounts for the fretting which is sometimes mistaken for hunger. If the nurse will take the baby and hold him with his head to her shoulder, at the same time gently patting his back, the gas is usually expelled. If he is

now placed on his side and comfor
he will sleep. The nurse should be c
the upper portion of the mother's ch
light cover while the breast is exposed
She should remember also that a w
who nurses more or less rapidly a
few weeks becomes heated at the tir
and should, therefore, be free fro
clothes or coverings at the time of n
infant's mouth should be wiped ou
after each nursing with a solution o
5 gr. to the ounce. This should be
night and morning and kept in a
A small pledget of absorbent cotto
moistened in the solution, so that th
cotton will not become detached i
mouth, should be swabbed over the ton
carefully by the point of the nurse's

Sometimes after nursing there will
flow of milk from the child's stoma
spoken of as regurgitation. It is a
child's stomach has been filled too
comes either from the excessive secre
or from the failure of the child to diges
which is swallowed.

In instances where the milk apparen
with the infant the physician may re
men for analysis. Such specimen
obtained at a single nursing unless
otherwise instructed. It is taken
nursing or after the first milk is w
pump, should the infant not be nu
thus called Middle Milk. It is best
the laboratory in a test-tube correspo
diameter of the graduated tube used fo
the specific gravity. A tube 1 inch

Mixed Feeding.—When the infant loses weight after being put upon the breast it is unsafe to rely entirely upon the mother's milk. Therefore, until a test can be made to determine whether the mother's milk is permanently deficient in quality or whether temporarily so from restricted diet or the inactivity which comes from lying-in, the baby should receive from two to three bottles in twenty-four hours to make up the deficiency in food. These bottles may be given either in place of breast feedings, if it be desirable to save the drain on the breasts, or if the patient fears that she may not be able to nurse her infant the bottles may be given without the mother's knowledge after the breast nursing. The quantity and composition of the artificial food should be determined by the physician. The quantity usually corresponds to the table given on page 236.

Beside the systematic feeding the nurse should pursue a *daily regimen* with the infant which is practically unvarying, after she has established the proper routine. As regularly as the baby is taken up for nursing the diaper should be changed, if necessary. Following the daily bath, to be given after the mother's toilet in the morning, the cord should be inspected and freshly dusted with powder.

When the cord is shed the point of attachment should be carefully cleansed, the surface dusted with boric acid, and a compress of gauze ½ inch thick and 1½ inches in diameter should be held in place over the navel either with a strip of adhesive plaster or by being stitched to the binder. This can be removed in a few days without renewing. Should further pressure be necessary the physician will advise what should be done. The infant's breast and the foreskin or prepuce in the male child should also be inspected. The foreskin should be stretched back daily and cleansed and greased with cold cream at the time of the bath.

After the cord falls the baby can b
fully in the tub. The mouth shoul
at daily, in order to be sure of its
Toward night the baby should be u
fore a warm fire with the exception of
binder, be rubbed over by the hand,
his night clothing, and held comfor
nurse's arms to relax the more or less h
tude in which he has lain, and to relieve
ness. The infant will be more likel
change becomes a habit, to rest quie
The baby wears at night practicall
clothing as in the day, except that i
part of the year the outer night-slip m
of flannelet in place of the muslin s
weather it is a mistake to keep the c
according to any selected weight of c
flannel petticoat can be rolled up and
feet partly exposed, or, if this is unwis
portion of the body can be covered
afghan. It may be even proper in e
to take off the petticoat and allow the
with the lightest kind of short slip
shirt and diaper. Among the other p
the daily routine the nurse should take
temperature by the rectum twice da
a record of it on a special chart. She
weigh the baby daily or less frequently,
the physician's orders, recording the
on the temperature chart or on a weig

Where it is possible the baby should
a room adjoining that of the mother, e
times when he is brought to the latter
A stationary crib is the best place for
He should be protected from draft a

turbed by light. It is unnecessary to have the baby rest on a pillow. If it is more satisfying to the mother to use a pillow, one that is flat and smoothly covered by a light muslin slip without ruffles is the best. In place of a crib a bassinet may be used; such a choice, however, is entirely a matter of indulgence of the mother's taste, but a bassinet is not so comfortable for the baby and usually not so well protected from draft as a properly arranged crib. The old-fashioned cradle, with a mattress not too yielding, is not unadvisable, except for the ease with which it can be rocked, as the temptation to soothe the baby by rocking is always present; this forces upon the infant at once the habit which, under the best circumstances, is too easily acquired; namely, that of depending upon rocking to be soothed. After the baby is put to bed at night the light should be lowered so that the infant can begin at once to pass the hours best adapted to sleep without light. An essential piece of furniture in the baby's room is a portable screen; this can be used to protect the bed from draft and light, and to surround the nurse when she bathes the baby, in order that the heat of the room may be properly concentrated. The temperature of the baby's room during the sleeping hours should not exceed 68°. At the time of the bath it may be 70° or 72°.

A good nurse will appreciate the importance of regularity in the management of the baby. The routine apportionment of the various steps in the daily care of the baby, such as absolute regularity in the hour of feeding after the period has been reached in which the proper routine is established, that is, after the first three days; the unfailing punctuality with which the baby is undressed and put to bed; the observance of a definite rule both in the time selected for the bath and in the various particulars of the bath, such, for instance, as the rubbing

after drying, and the proper ventilating and warming of the clothing; the regularity with which the baby's room is aired and cleaned; the systematic changing of the diaper—all count not only for the successful starting of the infant, but for good health after the newborn period.

CHAPTER XXII

AFFECTIONS OF THE NEWLY BORN

Asphyxia.—Every infant undergoes the risk of asphyxiation or suffocation in instances where the birth has been difficult. That is to say, the nurse should look for this accident in forceps application, in version, in all instances of prolonged labor, and in labor accompanied by bleeding. Even in normal cases, where the umbilical cord is wound about the child's neck, there may be severe compression, causing asphyxiation or suffocation.

The nurse should be familiar with the appearance of an asphyxiated child, as, when such an infant is turned over to her, she is, in most instances, responsible for the latter's resuscitation, especially in those cases where the physician is still occupied with the mother. In mild instances of asphyxia the surface of the child's body is livid and the lips are blue, the muscular rigidity is, however, still present, and the heart can be felt beating under the ribs. In more extreme cases the heart-beat is not to be felt and the child is pallid and limp. Although the latter condition may cause the nurse to be discouraged in her hope of reviving the infant, she should remember that surprising results have been obtained by vigorous and constant effort toward resuscitation. The mild degree of asphyxia is called Asphyxia Livida—the grave degree Asphyxia Pallida.

The nurse should have ready an infant's tub filled with heated water to a depth sufficient to cover the infant when immersed; the tub should

be placed at a convenient height, preferably upon two chairs facing each other. She should have at hand, also, both hot and cold water; the former to add to the tub water in order to keep it constantly heated, the latter for the purpose of spraying the chest to stimulate respiration. She should have whiskey also at hand.

The cord should be tied at once and the mucus dislodged from the throat by introducing the finger covered with gauze or by suction upon a rubber catheter carried into the child's pharynx. The infant is then supported by grasping the feet with a dry towel; while in this position the nurse should slap the back vigorously just above the buttocks. If there is much vernix caseosa or bloody discharge adherent to the surface of the infant the back should be carefully dried in advance.

Without waiting to repeat this the child is now immersed in hot water at a temperature giving a sensation of distinct heat to the nurse's hand. While the child is held with the left hand of the nurse supporting the shoulders and neck the right hand grasps the legs and bends the knees upward until they touch the chest; the legs are again straightened while the child's head is allowed to fall somewhat backward, avoiding by great care submersion of the face and mouth. This manipulation will produce an artificial effort at respiration. The nurse should place her hand frequently over the region of the heart to feel whether there is any pulsation. At the same time an assistant should allow a small stream of cold water to be sprayed from a pitcher held at a slight elevation from the child's chest. The child's lips should be bathed occasionally with whiskey.

Should these efforts prove unsuccessful the measure which is probably most effective in all cases should now be resorted to; namely, a piece of gauze folded once, so that it is double, is placed over the

infant's mouth and nose while the infant is still in the bath; the nose is held tightly with the finger and thumb of the left hand, while with the right hand the gauze is held applied to the child's face. The nurse, bending over the child, places her lips to the child's lips and blows into the mouth, inflating the lungs. The lips should be withdrawn and artificial expiration should be carried out by bending the infant's knees, as described above. This should be repeated for a few times until the child's skin begins to take on a pinkish color and the pulsation of the heart is revived. The child is now put into a warm receiver, given a few drops of whiskey in water, and surrounded by hot-water bags.

INJURIES DURING BIRTH

Cephalhematoma.—This signifies a blood tumor of the head. The effusion of blood takes place in the deeper tissues underlying the scalp. It is not, strictly speaking, the result of direct injury to the child, but is the result indirectly of pressure during birth.

The significance of this condition, as far as the nurse is concerned, lies in the fact that the swelling which arises may be more or less extensive, giving rise to anxiety on the part of the nurse lest it may affect the child disastrously. This is seldom the case, however, as the tumor usually disappears without trouble, although slowly. The skin of the overlying scalp is usually but slightly discolored. The mass itself may become soft and fluctuating, as the blood begins to be absorbed.

The treatment is entirely expectant, that is, nothing should be done, as rubbing is harmful, and any attempt to compress the mass is unnecessary.

Injury from Pressure of Forceps.—Injuries of this character are of two varieties: one including lacerations or tearing of the skin of the head or

face; the other including pressure affecting either the brain itself or the larger nerve-trunks leading from the brain.

Lacerations occur from the cutting of the edge of the forceps' blades. They are usually not deep and unless too much skin is scraped off they heal readily. The nurse should not let herself be discouraged by the swollen and lacerated appearance of the child's face in difficult forceps cases, as the tendency in the newly-born toward prompt healing is very marked.

On the other hand, suppuration may occur in a slight wound, should it become contaminated. Where, therefore, a wound shows a tendency to irritation the nurse should see that the infant's finger-nails are kept closely trimmed by peeling the thin sharp edge (not by cutting) and that the nails are kept clean. In some instances it may be necessary to restrain the hands by binding the upper arms loosely to the chest, or to cover the hands.

The points of laceration or abrasion on the face should be carefully watched, as it may happen that the tissue underlying the skin may begin to grow dense and swollen, even after the abrasion has healed. An abscess lying beneath the layers of the skin will begin in this way. It may finally have to be lanced. The nurse should pay particular attention to such abrasions. If she is successful in keeping them clean and free from irritation the healing will occur without an abscess. If, on the other hand, an abscess should form and it should have to be lanced a scar would result, and if the cut should have to be made in the cheek a slight flattening of one side of the face might result from injury to one of the muscles.

If it be necessary to bring the edges of a small cut, say on the forehead, together with stitches the wound should be dressed with collodion. In

fact this dressing is useful in protecting other cut surfaces, if they are not too extensive.

The effect of pressure from the forceps, when affecting the brain, is very quickly shown after birth. The child is drowsy and shows no desire to take nourishment. There is frequent vomiting of bloody mucus and the infant gives vent to its suffering by a hoarse, fretful cry which is almost constant. Eventually, swallowing becomes impossible and the child dies in convulsions. On the other hand, where there has been but slight injury the symptoms may be moderate in degree, and the infant, after having undergone more or less prolonged shock, will begin to revive.

In managing such children the nurse should take the rectal temperature at least three times in twenty-four hours, as a marked depression in temperature accompanying the shock of this condition, as well as a steady rise, denotes an unfavorable course. The infant should be surrounded by artificial heat and an ice-cap applied to the head. The child should be disturbed only for the necessary changing. It should receive either a solution of condensed milk, 1 to 40, or two or three drops of whiskey, diluted with slightly sweetened water, at regular intervals. Whichever of these solutions is used it should be administered from a medicine-dropper in drop doses. Such infants should not be bathed, except for immersion in the hot bath to revive them in case of sudden depression or to allay convulsions. They should not be dressed, but should be protected by a gauze jacket lined with cotton folded about the body, including the arms. No attempt should be made at nursing until the child shows increasing ability to swallow and some sign of hunger.

Compression of the nerve trunks from the forceps is shown in paralysis of one side of the

face, in instances in which the facial nerve is affected, and in paralysis of one arm (Fig. 55), where the plexus or group of nerves which supplies the arm and shoulder is pressed upon. In both instances the region below the child's ear or neck will probably show a point where the edge of the forceps blade has pressed.

The nurse need not be alarmed to find in facial palsy one side of the child's mouth drawn and the face distorted. The distortion seldom prevents nursing and the palsy usually disappears in a few days. The nurse should be particular in keeping the child out of the mother's sight, except at the time of nursing, as the distortion of the face will

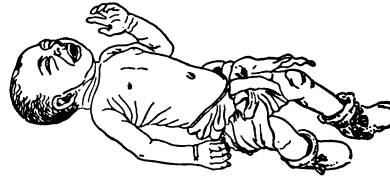

FIG. 55.—Paralysis of right arm following pressure from forceps application.

disturb her. She should try, if possible, not to have the child cry in the mother's presence, as crying increases the distortion.

The paralysis of the arm usually goes unnoticed at first, but gradually the nurse begins to realize that the arm hangs limp. If this is discovered it should be reported at once to the physician, in order that he may exclude the possibility of fracture or dislocation.

Like facial palsy, paralysis of the arm will also disappear; usually, however, less promptly than the former.

Fractures and Dislocations.—It is not usual for the infant during birth to suffer fracture of one of the bones. This accident does occur, however,

involving the upper arm, the thigh, the collar-bone, and the flat bones of the head. In the last-mentioned variety the fracture arises from undue pressure of the forceps or its faulty application. It is so often associated with brain pressure, so that the symptoms are practically the same as those of pressure.

Fracture of the collar-bone and of the upper arm is usually the result of the attempt to extract the child after turning. The nurse can be more or less prepared for such an accident if the extraction has been extremely difficult; sometimes the snapping of the bone can be heard at the time of fracture. Breaking of the thigh-bone occurs sometimes in the attempt to bring down the breech when the latter presents.

After a difficult extraction the nurse should bear in mind the possibility of a fracture and inspect the child carefully during the bath. A break in one of the long bones, for instance in those of the arm or thigh, will be evident from the inability of the child to move the arm or leg and from the pain which is present. Fracture of the clavicle or collar-bone is noticeable only from the child's suffering. The infant cries when moved or when put to the breast, and finds comfort only when lying.

Fractures are treated as in the adult, by firmly fixing the broken bone in a bandage. When the physician treats the case in this way the nurse will have a difficult time in bathing the child, as the bandage which is usually used is of plaster of Paris, and is necessarily bulky. The thigh fractures are more difficult to manage, on account of the bandage becoming soiled with the discharges. It is impossible for the infant to wear a diaper and he will, therefore, have to be kept constantly clean and the discharges collected in a pad of absorbent cotton loosely packed in gauze.

Dislocations are less common than fractures. That of the shoulder is the most common. The nurse should always report to the physician any inability to use the arm. Although such inability may be due to paralysis which is likely to improve without treatment, it may, on the other hand, be due to dislocation, which is incurable unless treated. The plaster of Paris bandage is also here employed to hold the joint in place after the dislocation is reduced.

MALFORMATIONS

Infants are often born with some defect in formation, either of a single part or of various parts of the body. The most common malformations are spina bifida, club-foot, cleft palate, closure of the anus (imperforate anus), protruding tumor of the head from the pressing out of the watery contents of the skull (meningocele), tongue tie (persistent frenum), and adhesion of the foreskin.

Spina Bifida.—As to the first condition: Spina bifida is a condition in which the membranes of the spinal cord, distended with fluid, protrude

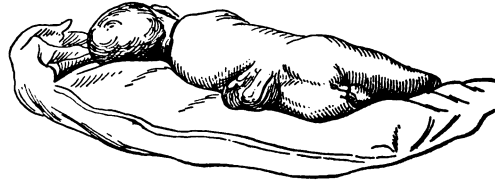

FIG. 56.—Spina bifida in an infant with club-foot.

through an opening in the vertebral column, forming a tumor usually at the lower portion of the spine. The treatment at the hands of the nurse lies in protecting the tumor from injury. If the skin covering the tumor is ruptured and the fluid contents escape the child is likely to die. An

antiseptic dressing of cotton and collodion is usually the only measure employed. Sometimes such cases are operated upon, but final recovery is usually not to be expected.

Club-foot.—Club-foot is a very evident deformity. Nothing can be done for it in early life. The nurse's duty consists in judiciously withholding the sight of the deformity from the mother, if possible, until she is strong enough not to be shocked by the discovery and is able to reason about the future treatment.

Cleft Palate.—Cleft palate is a deformity which affects the child's condition from the first, as it usually interferes with nursing. This should be overcome by the nurse managing the child to see that he is made as comfortable as possible at the breast. Sometimes early feeding by the spoon is necessary until the child gets accustomed to swallowing. In bad cases a flat rubber shield attached to the nipple will have to be used to fit over the defect in the arch of the palate when the nipple is inserted into the mouth.

Imperforate Anus.—Closure of the anus is a serious defect in formation. These cases require prompt operation. If the meconium is not passed and the child becomes restless, with increasing swelling of the abdomen and beginning vomiting, the anus is probably occluded.

Meningocele.—In protrusion or hernia of the brain substance or of the contents of the membranes of the brain the condition should not be mistaken for the less grave condition of caput succedaneum or of cephalhematoma. Meningocele is a serious malformation and usually leads to rapid decline in the child's vitality and to death.

Tongue-tie.—When the fold of mucous membrane attaching the tongue to the floor of the mouth extends to the tip of the under surface of the tongue it ties the tongue and makes it more

or less immovable. The frenum, as it is called, can be readily seen, and besides this the tip of the tongue is blunted and drawn back, as if nicked. Such a condition should be reported at once, as it will interfere with the infant's nursing. It can be readily overcome by cutting, provided the physician concludes that this is necessary. For examining the mouth to detect the condition of the tongue the infant is held over the left arm and the chin depressed with the finger of the other hand. This will usually cause the infant to cry. In so doing it will open the mouth.

The snipping of the frenum requires no special after-care, unless it bleeds. This is sometimes the case in children who are given to bleeding, and if persistent oozing is kept up the physician should be notified, as it is an important complication.

Adhesion of the Foreskin.—Adhesion of the foreskin should be dealt with by gently stretching the skin backward each day at the time of the bath, washing it carefully at first and afterward anointing it with cold cream. If the foreskin is unyielding or bleeds freely from cracking of the skin when firmly pressed back it will require the physician's intervention; as to circumcision, the necessary preparation includes sterilization of the instruments, the preparation of bichlorid solution, towels, cotton or gauze sponges, a table on which the infant is to be held, basins, tray, and waste bowl. The newborn infant is never anesthetized for this operation. The child should be placed toward the edge of the table, while the nurse stands at one side. The infant's thighs are flexed and held by the nurse in order to obviate any risk of injury to the child from the sharp instruments in use. Much swelling results, but not enough to interfere with passage of urine. The pain following the operation is insignificant and the infant is usually comfortable. The dressing may be a square of gauze saturated in

boric-acid solution or spread with vaselin. The infant should be frequently inspected to see that the change of dressing is made as often as wetting occurs. For a few hours after operation the dressing should be more or less frequently inspected lest hemorrhage should occur. The rectal temperature should be taken regularly twice daily. If hemorrhage takes place, with clotting of blood over the wound, the dressing is apt to stick. In such instances a gauze dressing thoroughly spread with vaselin, and frequently changed, is best. Catgut sutures are usually employed; should they begin to cut into the foreskin, with much swelling of the latter, the condition should be reported. Circumcision is usually performed after the tenth day.

DISEASES ORIGINATING BEFORE BIRTH

Cyanosis.—Blueness of the surface, due to imperfect circulation, is characteristic of some children from the time of birth. It is more than the passing lividity which belongs to asphyxiation. The condition arises from some obstruction in the circulation, arising, first, from stoppage in the circulation of the blood through the lungs; secondly, from an abnormal course of the blood either in the heart (an open foramen ovale) or in the vessels given off from the heart; thirdly, from pressure causing obstruction in the breathing.

Some of these blue babies suffer from difficulty in breathing (dyspnea), while others are entirely free from this, and are merely discolored. The infant's temperature is depressed. The child is more or less limp and shows no appetite.

If the infant can lie at all it should be kept upon its right side; it should have artificial heat to its feet and body; it should be given drop doses of whiskey in water at first and gradually put upon a milk solution fed from a spoon. The child should

be lightly sponged and handled as infrequently as possible.

The nurse should be prepared for the more or less sudden passing away of the infant. The latter should be watched closely, but shown to the mother as seldom as possible. It may die, either in a convulsion or by simply becoming weaker. Some of these children suffer from a malformation, the cause of cyanosis, which will correct itself during development. Such children get gradually better. This is an unusually favorable outcome, but such a possibility is worth all the watchfulness the nurse can give the infant.

Syphilis.—Syphilis is inherited and in many instances the infant is born with the signs of the disease. Among them is emaciation, the thin, wan appearance of the child giving rise to what is called the "old man appearance." The skin is yellowish, the abdomen, from increase in the size of the liver, is enlarged. Such an infant is delicate, and the disease must be eradicated as far as possible before the infant can thrive. Inunctions of mercurial ointment are usual. They should be rubbed into the skin, either under the arm-pits or on the inner side of the thigh. The quantity of this ointment prescribed should be carefully used, no more and no less. The infant is not to be immersed in the tub during this treatment.

Skin eruptions are very likely to occur in syphilis, usually on the soles and palms and about the genital region and navel. The nurse should understand the significance of snuffles in a newborn infant. If the nose is obstructed by a crusty deposit and if the child is hoarse the suspicion of syphilis may be entertained, although the diagnosis should, of course, be left to the physician. Further than this, the evidences of syphilis are enough to make the nurse most particular to avoid showing the least suspicion as to the cause of trouble. Her

attitude should be that of caring for the infant, with scrupulous attention to the physician's orders, and in watching for any symptoms which may mark the irregular course of the disease, such as hemorrhage from the stump of the cord, inflammation of the joints, inflammation about the finger-nails, and of the bones of the fingers. Such symptoms occur occasionally in addition to the more prominent ones mentioned above.

Bleeding.—The tendency toward bleeding is also a congenital condition. The blood may come from the stomach, the stump of the cord, or the skin surrounding it; it may occur even beneath the skin and from the bowel. In many instances it is not to be controlled. In other instances patient care will tide the infant over to the period of recovery. The nurse should understand that even slight bleeding, especially from the stump of the cord and rectum, may be the forerunner of a hemorrhage which will gradually sap the infant's vitality. The nurse should never be satisfied with the apparent control of bleeding. The cord, for instance, should be frequently inspected. The signs of internal hemorrhage should also be looked for, such as pallor and limpness, as an undiscovered source of internal hemorrhage might cause sudden symptoms. The rectal temperature may be taken, except in instances of bleeding from the bowel. The most approved treatment is the administration of gelatin water either by the mouth or rectum.

ABNORMAL CONDITIONS ORIGINATING IN THE NEWBORN PERIOD

Ophthalmia.—Although ophthalmia develops in the newborn period, the inflammation of the eyes occurs by the contact of the eyes with the diseased mucous membrane of the vagina at the time of birth. The origin of the inflammation is due to the germ of gonorrhea.

To prevent the inflammation the eyes should be flushed out by mild boric-acid solution at the time of birth. The solution is injected into the eye from a sterile bulb and glass tube while an assistant nurse holds the lids apart by pressing the lids downward with the thumbs, one over each lid. A drop of nitrate of silver solution, as previously described, ½ gr. to the ounce, is now instilled into each eye and washed out with normal salt solution. All this may be quickly done, even before the child's shoulders are born.

FIG. 57.—Method of using irrigation in treating ophthalmia neonatorum.

If ophthalmia develops—and this is likely to make its appearance in the third or fourth day—the lids become swollen and exude a citron-colored serous fluid. This is followed in a few days by pus. The most successful treatment is that of irrigating the eyes with warm salt solution. The solution is contained in a glass douche-can at a height of some 4 or 5 feet above the child's head which is held on the nurse's lap, she and the infant both being protected by rubber sheeting, one

piece on the nurse's lap and the other enfolding the child's shoulders; the stream is carried by a glass douche nozzle directly into the infant's eye (Fig. 57) at first for five minutes every half hour, then for five minutes every hour until the swelling begins to abate. Other applications, as the physician may direct, may be used.

The mother should be warned of the danger of contamination to her own eyes, likewise of the spread of the infection from one to the other eye of the infant. In hospital practice both the mother and the infant should be isolated. The clothing should be washed separately and the utensils kept distinct from the other patients. One nurse should have sole charge of such a case. In private practice the mother should be encouraged to believe that the inflammation will finally abate. The course of the infection may be from four to six weeks. In neglected cases the child may lose the sight of one or both eyes.

Icterus.—Extreme yellow discoloration of the skin in the newly-born (icterus neonatorum), is a sign of the decomposition of the blood. It is accompanied by rapid emaciation and frequently by bleeding from some of the delicate structures of the body, notably beneath the conjunctiva or membrane covering the eyeball.

The nurse should not be satisfied to look upon the ordinary jaundice which occurs in the newborn period as a customary condition, unless she finds that the infant is unaffected by it. Should the child show an unwillingness to nurse, and fever and emaciation be present, the condition is serious.

Pneumonia.—This is a deceptive condition, as the infant shows merely the rapid breathing and fever characteristic of pneumonia. Cough is usually not present in the newly born. The nurse should be aware of the fact that pneumonia is a common occurrence in weakly infants. A marked

rise in temperature, with rapid respiration, should warn her of the possibility of pneumonia. Pneumonia may develop as an accompaniment of a septic condition which may reveal itself by otherwise insignificant symptoms. For instance, a suppurating wound from injury by the forceps or from infection of the stump of the cord might result in pneumonia. The greatest care should, therefore, be exercised in watching the course of even a slight septic inflammation.

Affections of the Skin.—The common eruptions are those of syphilis and those due to indigestion and heat.

Syphilitic eruptions are alluded to above. The common eruption due to indigestion is red gum. This appears over the face, especially about the mouth and chin, in the form of elevated red spots and patches. It occurs also on the body. The child is considerably disfigured by the rash, but the mother may be reassured of its disappearance as the digestion improves. The rash makes its appearance about the fifth or sixth day.

The small elevations of the rash may become distended with serum. It is then spoken of as white gum.

The treatment consists in using soothing applications of corn-starch and talcum powder, in equal parts. No soap should be used in bathing for a day or two. The physician's treatment for the underlying indigestion will usually dispel the rash within a few days.

Heat rash or prickly heat usually affects the neck, the inner surface of the elbows, and the forehead. The body underlying the binder and beneath the arm-pits is also affected. The infant in summer should be lightly clothed, the socks removed, without a flannel petticoat, and the skirt of the slip pinned up. A warmish bath followed by rubbing with corn-starch paste, which is after-

ward allowed to dry into a powder, will soothe the skin.

Indigestion.—Improper action of the bowels is among the first evidences of indigestion. The stools are usually green and contain curds of undigested milk. The evacuations are often frequent. The buttocks in the neighborhood of the anus become red and excoriated. Even without diarrhea this latter appearance should suggest to the nurse the presence of indigestion. The improper quality of the urine, also due to indigestion, increases this excoriation. The nurse should, therefore, be most particular in changing the diaper as often as necessary. The infant's buttocks should be cleansed with olive oil applied by a soft piece of cambric. The part may then be spread with cold cream and dusted lightly with talcum powder or boric acid.

Colic is not a common symptom in newborn children. Gas often collects, but its presence makes the child restless without causing actual pain. The sucking of the tongue and rubbing of the fists into the mouth after feeding usually indicate beginning discomfort from gas. If the infant be elevated with its head held over the nurse's shoulder while gently patted on the back, the gas will be expelled. Solution of soda-mint, 10 drops to ½ teaspoonful of sweetened water, or 3 drops of whiskey in a teaspoonful of water also sweetened, may be given. Both solutions should be given mixed in warm water. Heat applied to the child's abdomen by means of a hot-water bag is always comforting.

Constipation.—Some infants are constipated from the beginning. The colostrum acts as a natural laxative, but if the mother is unable to nurse her infant this is lacking. Artificial means of inducing the bowels to move must here be resorted to. The simplest measure is the use of an injection—an enema of normal salt solution or of castile soap and water

may be given by means of an infant's bulb syringe. If colic is a symptom, together with constipation, a high injection of either one of the same solutions may be given by means of a fountain syringe with a soft rubber catheter attached to the nozzle. It has been demonstrated that a catheter, when used in this way, may be readily bent upon itself while, at the same time, it is accommodated in the rectum. Therefore, the catheter should be well lubricated and introduced with great care. It goes without saying that the air should first be displaced by the descending fluid before the catheter is introduced, also that the temperature of the water, as it emerges from the catheter, is proper. The child should be placed upon the abdomen across the nurse's knees, the latter being protected by a rubber sheet. The water should be allowed to run in gradually. This may be effected by gently compressing the rubber tubing.

Sometimes a suppository will be sufficient. This may be in the form of a soap stick, trimmed down from a piece of castile soap. A long flexible glycerin suppository may be used. Either one of these suppositories is introduced by holding the end of it in the napkin while the suppository is pressed well up in the rectum. Infant gluten suppositories may be used. These are inserted fully into the rectum and are carried well up beyond the grasp of the sphincter muscle. It is unnecessary to restrain the child after their insertion if they are properly introduced. If liquid remedies, such as castor oil or sweet oil, aromatic syrup of rhubarb, milk of magnesia, solution of calcined magnesia are used they should be given always by a teaspoon which has first been dipped in hot water to remove the chill from the contents of the spoon.

Constipation may be overcome by giving the infant twice daily an ounce of boiled, slightly-sweetened water from a nursing bottle.

Coryza.—Newborn infants are apt to suffer from slight cold in the head. The dryness of the indoor heated atmosphere in winter is the most frequent cause. Coryza is best cared for by cleansing the nostrils by a pointed roll of soft cambric and by anointing the bridge of the nose with vaselin. Sometimes a drop of albolene or liquid vaselin is instilled into each nostril by a medicine-dropper at the time the infant is put to bed.

Thrush.—In weakly children, or in those in whom either the cleansing of the mouth or the care of the nursing bottles has been neglected, a white deposit appears upon the tongue, the roof of the mouth, and the inner surface of the cheeks. This makes its appearance in well-defined points which, however, may afterward spread. The mouth becomes exceedingly sore and the nurse will find difficulty in inducing the infant to nurse.

The remedy really lies in the nurse's hands, as careful cleansing of the mouth and tongue after each nursing will go far in relieving the condition. Powdered alum or borax in mild solution is astringent and healing. If alum is used it may be scalded to increase its solubility, a solution of a coffee-spoonful to a teacupful of water—not stronger, as a strong solution will serve to increase the irritation. This should be used not more than four times in twenty-four hours and after the mouth is cleansed. Syrupy solutions of borax are not desirable, as the fungus of thrush thrives on sugar. In bottle-fed babies the nipples and bottles must be boiled once or twice a day and the former allowed to soak in a saturated solution of boric acid. In hospitals the disease is apt to spread from infant to infant. Therefore, scrupulous care should be given to the bottle.

Convulsions.—Twitching of the muscles of the face and of one or more of the extremities, with rigidity of the spine, constitute the form of general con-

vulsion of which the newborn infa
symptom is not so common as in ol
should, therefore, be regarded as m
warm bath should be given and th
in a warm blanket with heat to t
ice-cap to the head. The infant
dressed until after the physician h
study the condition. The tempera
taken in order to report it at th
physician's visit. The fact of the
convulsion should be withheld from

A local spasm affecting the lar
occurs. This produces with eac
a hoarse, rasping sound.

Hernia.—Hernia or rupture may
form of a slight swelling under the sk
either the groin or at the navel, withi
weeks following the shedding of the c
tinctive point in reference to rupture
in the swelling with the child's crying
to the pressure of the diaphragm a
muscles in straining. Hernia sho
groin (one or both sides) is usua
prominent. It is best treated by
compression. The best material to
a strand of zephyr as thick as the
can be crossed over the groin and t
waist, something in the nature of a s
This must be regularly changed, tog
napkin, to insure cleanliness. It may h
for some weeks. After the cord has
remain a protrusion of the navel, i
pressed by applying a half-inch adh
the abdomen, holding a compress of g
navel. This should be changed eve
and occasionally removed for a day o

once in order that she may escape censure, as, although the condition is a natural one, the mother is apt to think it is the fault either of the physician or the nurse. Of course all infants with hernia should be kept from crying as much as possible and should not be allowed to become constipated.

Inflammation and Infection of the Cord.—A perfectly healthy condition of the point of attachment of the umbilical cord is never accompanied by inflammation. Sometimes, however, a slight redness of the skin makes its appearance. If we investigate the condition further we will find the point of attachment moist and that the redness comes from this cause. We may speak of this as inflammation.

If, however, the child shows fever, wasting, and loss of appetite we may suspect a true infection, that is, the presence of infectious germs which have entered at the point of attachment and are spreading throughout the system.

The nurse's duty lies, first, in caring for the cord in the beginning, so as to keep it absolutely dry; secondly, in reporting the condition to the physician promptly, in order that he may distinguish whether it be a simple inflammation or an infection.

Infection of the cord is a serious complication; children are frequently apt to die from it. Therefore, the case should be managed in such a way as not to excite the mother's fears at the outset, and, as it is an infection, to prevent contamination of the mother herself. The child should not be given to the mother except for nursing, and the dressing of the cord should be kept antiseptic, while the child's clothing should be washed separately from that of the mother.

In hospital practice a case of this character should be kept isolated, as the infection is apt to spread from one child to another.

Late Shedding of the Cord.—Sometimes

instead of the cord separating on th
remains attached for a period lasting
end of the third week. This may ca
some anxiety in thinking that she has
ful of the cord. In reality, however,
arises from the improper process
The base of the cord remains moist an
It is much more extensive than in nor
and the cuff of skin surrounding it is s
physician may finally have to cut th
scissors in order to separate it.

As far as the nurse's care of the
instances, is concerned, all she can do
the base of the cord is kept as clea
possible. The usual dusting powder i
on account of the unnatural moisture
therefore, to keep the base of the c
treating it with peroxid of hydrogen.
condition demand any other applicat
sician will prescribe it. A fresh, ster
should be kept constantly applied.

Sometimes the extensive over-gr
which is left after the cord separates
be treated with a solution of nitrate of
surface is apt to remain moist for a lon
will need to be just as carefully
dressed as when the cord is still attac

CHAPTER XXIII

THE BOTTLE-FED INFANT

THE newly born infant can go for only a limited number of hours without regular nourishment. If at the end of this time there should be no milk from the mother, the infant will have to be put upon properly combined artificial food resembling, as far as possible, the mother's milk.

The physician will be called upon to select the formula for the bottle, but it is the nurse's duty to understand, in a general way, first, what the essentials of an artificial milk should be; second, the method of combining the ingredients of the bottle; third, the amount of food to be given in twenty-four hours; fourth, the management of the utensils and the preservation of the milk.

As to the first of these considerations, human milk differs from cows' milk in certain respects, which make it necessary to modify the latter when used for the infant. Human milk contains more sugar, in the form of milk sugar, more fat in the form of cream, and less proteid—the animal or albuminoid portion of the milk. Therefore, to render cows' milk similar to human milk it is necessary to add milk sugar, to use a certain proportion of cream, and to dilute the mixture to reduce the proteid. The usual diluent is water.

The natural proportions of the ingredients of human milk are: fat, 3 per cent.; sugar, 7 per cent.; proteid, 1 per cent. This can be readily imitated by combining certain quantities of cream, milk, water, and milk sugar. It has been found, however, that the curd which forms when cows' milk is

given is too tough to yield to the weak digestive powers of the infant's stomach. This curd is the result of the imperfect action of the infant's stomach on that portion of the proteid called casein. It has been found that this curd can be reduced into flake-like particles in the stomach by adding to the milk a certain proportion of malted food, that is, a farinaceous food the starchy ingredient of which has been converted into dextrin by the action of diastase or yeast. The ordinary proprietary foods, Mellin's Food, Malted Milk, Eskay's Food, etc., are of this character. They are not really foods, in the sense that they contain sufficient nutriment to maintain growth; their usefulness lies in their power to render the milk ingredients of artificial food more digestible.

The addition of such foods to the bottle is not always recommended by physicians, and when the bottle contains only the ingredients represented in mother's milk in the natural percentages, the method of feeding is spoken of as "Percentage Feeding." "Modified milk" is cows' milk which has been modified either to make it correspond in its ingredients to human milk or to alter it in some way which will insure its digestibility.

Unmalted solutions of farinaceous or cereal foods are sometimes added as a diluent to the milk. Such solutions are: rice water, oatmeal water, and barley water.

Sometimes, in order to remove the casein, the curd-forming ingredient, the watery portion of milk, that is, the whey, is used; to this cream and sugar of milk are added to complete the natural ingredients of the bottle.

Condensed milk is used as a convenient food where cows' milk does not agree with an infant. It is rich in proteid and sugar and deficient in fat.

So much for the ingredients of artificial milk.

It is now fitting to describe the method of combining them.

For *Percentage Feeding* a sufficient amount of food should be prepared to cover the needs of the infant for twenty-four hours. During the early newborn period from 12 to 20 oz. will be required.

In preparing 12 oz., by combining—

Cream,	1¾ oz.,
Milk sugar,	4 teaspoonfuls,
Lime-water,	½ oz.,
Boiled water,	10 oz.,

we have a bottle representing in its constituents human milk, although the proteid ingredient is below that found in human milk at this time. In other words, we have a formula as follows:

Fat 2.33 per cent.; sugar, 5 per cent.; proteid, 0.33 per cent.

The lime-water in this instance is added to increase the alkalinity of the cows' milk and in this way to bring the latter into correspondence with human milk.

During the second week, in preparing twenty ounces, the combination of—

Cream,	3¼ oz.,
Milk sugar,	6 teaspoonfuls,
Lime-water,	1 oz.,
Boiled water,	15¾ oz.,

will make a bottle containing—

Fat, 2.5 per cent.; sugar, 5 per cent.; proteid, 0.50 per cent.

During the third week by combining—

Cream,	3¾ oz.,
Milk sugar,	7 teaspoonfuls,
Milk (fat-free),	1¼ oz.,
Lime-water,	1 oz.,
Boiled water,	14 oz.,

we have a formula:

Fat, 3 per cent.; sugar, 6 per cent.; proteid, 0.75 per cent.

This latter formula will suffice in strength until the sixth week.

We should observe that this is based upon the original richness of cream, that is, what is spoken of as 16 per cent. cream.

In estimating the percentage richness of fat in cream the fact should be borne in mind that there are two methods of obtaining cream; one is by allowing the cream to rise—this is called "Gravity" cream. The other is by separating the cream from the milk by a centrifugal machine, as is done in the modern creamery and as is usually done in the milk laboratories—this is called "Centrifugal" cream. Gravity cream contains 16 per cent. of fat while centrifugal cream contains 20 per cent.

A simple method is to use what is called *top-milk;* that is, to use the upper part of a quart or pint bottle, according to the physician's direction, of fresh cows' milk which has stood long enough to allow the richer part of the milk to rise to the top. The milk can be removed from the bottle with what is known as the Chapin dipper (Fig. 58), which is a miniature milk ladle made with a straight handle and holding 1 oz. It is of such size that it can be easily dipped into the mouth of the bottle. When using the Chapin dipper it is well to take out 1 or 2 teaspoonfuls of cream from the top of the bottle, so that the dipper will not displace any of the top-milk.

Instead of using a dipper the top milk may be removed by siphoning, using a glass tube bent upon itself at that end which is introduced into the neck of the bottle. In this way the milk may

be drawn off and measured to obtain the desired quantity.

In milk of ordinary richness (4 per cent.), according to Holt, the upper half of a quart bottle repre-

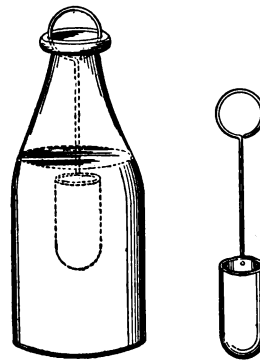

FIG. 58.—The Chapin dipper (J. P. C Griffith).

sents 7 per cent. in fat richness, the upper third 10 per cent., the upper fourth 13 per cent., and the upper fifth 16 per cent.

The cream and milk formulæ given above, for the first and second weeks, cannot be altered by substituting top-milk, as the use of top-milk would increase the amount of proteid, but after the third week, and from then on, we may modify the formulæ by using—

Top-milk,	6	oz.,
Milk sugar,	7	teaspoonfuls,
Lime-water,	1	oz.,
Boiled water,	21	oz.

We have—

Fat, 3.5 per cent.; sugar, 7 per cent.; proteid, 0.75 per cent.

The addition of malted food to an
bottles will but slightly alter the pe
ness, except in increasing the sweetn
kalinity. It is usual to omit the sug
lime-water in such instances. The so
aceous ingredients, in the form of ba
oatmeal water, will simply take the
if the solutions are of not too great
Lime-water may or may not be us
solutions.

Bicarbonate of soda, a pinch, or,
ately, an even salt-spoonful, which re
5 gr., may be added instead of lin
given quantity of prepared milk, as o
physician.

In using condensed milk we are ab
the constituents which are found in
the fat, proteid, and sugar, by dilutin
When twelve parts of water are mi
part of condensed milk the proteid is
point where it can be easily digested b
namely, to 0.65 per cent. Of course
reduction also in the fat richness of
because condensed milk, under all ci
is poor in fat. Such a dilution wil
the sugar to a point where it will n
cess, as it is when condensed milk is
diluted.

In using whey the casein is redu
is usually added to get the proper ar
The food is then adapted to deli
lacking the ability to digest curd.

The Actual Preparation of the
percentage feeding is used, the simpl
of the bottle, namely, cream, milk, a
top-milk and water, as may be select

stirred in with the other ingredients. The milk is then transferred to bottles, representing the number of feedings for twenty-four hours, the milk being equally divided among the bottles. The bottles are corked and placed on ice. The lime-water may be either added at the time of mixing the ingredients or the total quantity of lime-water may be equally distributed in the bottles after the milk is poured into them. At the time of nursing the bottle is taken from the ice-chest and immersed in a hot-water bath and provided with the nipple. To go over this more exactly let us note, first, that the bottle may be prepared thus originally without heating. On the other hand, the physician may direct that the food be either Pasteurized or Sterilized. If the former is done it means that the preparation is heated to a temperature of 167° and allowed to cool, after that point is reached, before it is transferred to the bottles.

Pasteurization.—Pasteurization is carried out by boiling the ingredients in the separate nursing bottles, filling each bottle to the graduated point representing the amount for each feeding. The bottles are then placed in a rack consisting of water-tight compartments into each of which a bottle fits. This rack, in turn, fits into a pail which can be tightly covered. There is space enough about the compartments to allow water to circulate in the pail. The bottles are corked with absorbent cotton and the compartment into which the bottles fit is filled with cold water, as well as the space around them. The rack is partially immersed in the water without the cover being applied, while the water is brought to the boiling point. As soon as this point is reached the pail is removed from the fire; the rack containing the bottles is thus left covered for a

half hour. After this time the rack is raised and cold water is directed into the pail to cool the water surrounding the bottles. As soon as the bottles are cold they are placed on ice and corked with rubber corks.

Sterilization.—Sterilization consists in bringing the milk to a temperature of 212°. By this means the bacteria, which are present in milk, are destroyed. By this process, however, the digestibility

FIG. 59.—Freeman's pasteurizer.

FIG. 60.—Arnold sterilizer.

of the milk is reduced. Sterilization is, therefore, less frequently used than formerly. The process may be carried out by placing the bottles in a sterilizing chamber through which steam circulates. The tin vessel constituting the sterilizer contains such a chamber, as well as a compartment beneath the latter, which receives the water which is evaporated into steam by heat applied from beneath. The form most commonly used is that known as the Arnold Sterilizer.

Condensed Milk.—In the preparation of condensed milk solution the individual bottle for each feeding is usually prepared at the time it is given.

If water is used as a diluent the water is heated in a sauce-pan and the condensed milk stirred into the water. The mixture is then placed in the bottle and fed when sufficiently cool. If barley water is used as a diluent it is prepared in quantity sufficient for twenty-four hours, and placed on ice in 8-oz. bottles corked with rubber corks. When the solution is prepared a sufficient quantity of barley water is poured into the sauce-pan and heated. The condensed milk is then stirred in.

Condensed milk may be measured either by means of a teaspoon or in a measuring glass. The former is preferable, if the nurse can estimate with fair accuracy the fulness of the spoon. When a glass is used allowance must be made for the condensed milk which adheres to the surface of the glass. This should be rinsed off and added to the solution. The condensed milk which is procured for use should be removed from the tin can in which it is sold and placed in a small Mason jar on ice. It can then be used from this.

Malted Foods.—Bottles prepared with malted foods are practically Pasteurized, as these foods require heat to thoroughly dissolve them. Two sauce-pans are necessary. In one the milk is sufficiently heated to retain its warmth after it is set aside. The other is now placed over the gas stove with the required amount of water to be heated in it. To this the malted food is added and stirred. The warm milk is now poured into the solution of the malted food and the mixture heated to 160°. The food is divided into bottles and set in a pail containing iced water. When cool the bottles are corked, either with absorbent cotton or rubber corks, and kept on ice. Malted foods prepared in this manner may be safely kept for twenty-four hours.

Whey.—In the preparation of whey add one junket or peptonizing tablet to a quart and pint of whole milk in a bowl or open vessel, the milk having been heated to 105°. Place on ice. After the curd has formed cut into small square masses with a knife and strain through a sterilized cheese-cloth. Keep the whey on ice and mix it with the other ingredients of the bottle at the time of feeding.

Barley Water.—In the preparation of barley water the use of pearl barley is to be advised. It is prepared by soaking 2 teaspoonfuls of the barley in a teacupful of cold water for two hours. Increase the water to 1 pint and boil slowly until the water is reduced to ⅔ pint, then strain through cheese-cloth and place in bottles on ice. A much more convenient method is to use prepared barley. Three teaspoonfuls of the ground barley are mixed into a paste by adding ½ teacupful of cold water. This is stirred into 1 quart of hot water. The mixture is brought to the boiling point while being constantly stirred. It should boil for twenty minutes or until the mixture is reduced by a quarter of its original volume. It should then be strained and placed on ice. If it is desirable to use barley jelly it may be prepared by adding 2 tablespoonfuls of pearl barley to a pint and a half of water. This should be allowed to boil slowly until reduced to a pint. There is enough gluten to form a jelly when cooled. This may be reduced to a liquid by adding water and heating.

Oatmeal Water.—Oatmeal water is made by adding 1 tablespoonful of thick oatmeal gruel to a pint of water. This should boil gently while being stirred until dissolved. It is then strained.

Peptonization of Milk.—Peptonization is brought about by the action upon milk of what is called pancreatin (a digestive ferment extracted

from the animal pancreas). Pancreatin is sold in powder, supplied in glass tubes, each of which contains enough of the ferment to peptonize a given quantity of milk. The tubes are called peptonizing tubes. They are put up by Fairchild Brothers & Foster, of New York. The ferment acts in the presence of heat. Two methods are advised. One is as follows: Dissolve the powder in cold water by mixing in a bottle or pitcher, add the milk in the proportion directed by the physician, and place the vessel in water at a temperature of 115°. After fifteen or twenty minutes the vessel is withdrawn and the milk solution divided in bottles which are rapidly cooled to stop further peptonization. The other method is that of complete peptonization; in this instance the vessel containing the milk is subjected to heat, as above, for two hours. The water in which the vessel stands is then brought quickly to the boiling point and after an interval of six minutes the vessel is withdrawn to be cooled. The boiling completes the further peptonization.

Peptonization, as well as the modification of cows' milk, can be accomplished by the use of what is known as Peptogenic Powder, sold also by Fairchild. When the milk is properly diluted and subjected to the action of Peptogenic Powder it is not only made more digestible by the peptonization, but it is modified as to sweetness, alkalinity, and richness in fat and proteid, thus resembling human milk. The Peptogenic Powder is first dissolved in cold water, the milk is then added, and the mixture is heated to 115° in a saucepan and withdrawn after eight minutes. It is then apportioned in bottles which are rapidly cooled.

The quantity of food to be given varies in accordance with the age and capacity of the infant. The average suitable amount follows:

INDIVIDUAL FEEDING

		Total amount during twenty-four hours.
First week, beginning on second day,	1 ounce.	7 ounces.
Second and third weeks,	2½ ounces.	20 ounces.
Fourth week,	3–4 ounces.	24–30 ounces.

During the first two days the infant should be fed every four hours. After this every two hours in the twenty-four, until the end of the first week. After this every two hours from 6 A.M. until 10 P.M., and once during the night, between 1 and 4 A.M., until the third week is reached, making ten feedings. After the third week two and a half hour feedings are in order, making nine feedings in twenty-four hours.

Care of Bottles and Utensils.—First, as to the nipples: They should be procured without holes (blind), to insure against too rapid flow. The proper-sized hole may then be punched with a needle heated to a white heat. The nipple should always be tested, when attached to the bottle, to see that the milk does not flow too freely. The nipples are not to be attached to the bottles until the time of nursing. They are to be detached from the bottle always immediately after each nursing. A sufficient number of nipples should be ready for daily use, to permit of a rotation in their use. The nipples should be kept in a covered vessel containing saturated solution of boric acid. After nursing each nipple should be turned inside out and scrubbed with soap and water before being soaked. They should be boiled once a day. Old nipples get foul and the rubber is apt to soften.

Corks and bottles: Properly fitting rubber corks are better than cotton for stopping the bottles, when they are on ice. They should be boiled once a day.

As to bottles, there should be enough in use to

meet the demands of the daily feedings. That is, one bottle for each feeding. They should be boiled in soda water once a day, being immersed in cold water which is afterward brought to the boiling point to prevent breakage. After use the bottle should be promptly cleaned with warm water and soap by means of a bottle brush. The bottle should be rinsed and allowed to stand filled with a boric-acid solution.

The infant should be laid, while nursing, on the side in the crib or basket. The nurse, however, should hold the bottle so as to keep it properly inclined. This prevents the infant taking air. If the bottle is gently pulled away from the infant, the latter is apt to draw more steadily and not to play with the nipple or doze while nursing. It should require from ten to fifteen minutes for the infant to empty the bottle.

The nurse should select a well-furnished corner in the bath-room or in some nearby apartment, which she can look upon as her laboratory. She should have at hand running water, a broad shelf, a gas-jet with tube attached for gas-stove, an even, broad table for her sauce-pans, and a refrigerator. This corner should be well lighted by day and within reach of a good gas burner at night. She should be provided with enough bottles, corks, and nipples, gauze for straining and for drying the utensils, matches, bottle brush, bottle thermometer, bicarbonate of soda, and boric acid. Sterile water (boiled and filtered) should be at hand, and if this is not available the nurse should see to it that a supply of bottled spring water or Poland water is always ready.

If possible, the nurse should be able to keep this corner to herself. It is even desirable to select a bath-room away from the nursery, if it is impossible otherwise, to control her surroundings.

She should always have the empty bottles clean and filled with boric-acid solution, her sauce-pans clean and dry, the refrigerator clean, and the nipples soaking. She should learn at what hour the milk is supplied and she should take prompt charge of it, so that from the moment of its delivery it may be under her control.

Nothing facilitates the management of bottle feeding or inspires the confidence of those about the nurse in her ability more than the proper system in these things.

In some instances the *percentage modification* of cows' milk may be carried out by means of measuring off the cream and milk in a graduated glass vessel specially designed and adding water up to a point which represents in percentages the desired proportions of the food. The graduations marked on the glass have been worked out to accurately correspond to these percentages. For instance, by using a 4 per cent. milk and observing the marking corresponding to the total amount of food to be mixed, we may obtain a desired richness in proteid and fat by pouring this milk into the "Modifier" up to a line marking the required richness of proteid in the total amount; the vessel is then filled with water to a given line. This makes the proper dilution and gives a fat richness corresponding to the proteid richness. Such modifiers are patented and are sold under various names.

The above methods of modifying milk may be carried out in the nursery and are, therefore, included in the term "Home Modification." When this process is carried out by the mechanical methods now used to separate the fat of milk, and the food ingredients brought together again to make up the percentages, the method is spoken of as "Laboratory Modification." When the milk is sent from the laboratory it is bottled ready for

use. The bottles should be promptly placed on ice and the time of delivery should be carefully observed, as irregularity in delivering the bottles may destroy the freshness of the milk. The bottles after use should be as carefully rinsed and boiled as in home modification.

Signs of Indigestion and Malnutrition.—Probably the first evidence that the food does not agree with the infant is vomiting. This usually comes on after feeding. The milk is ejected in curds. Colic may sometimes accompany it. Inspection of the stools will show small curds. In addition, the stools may be pasty and broken up, sometimes green and mixed with mucus. Excoriation of the buttocks and anal region is frequent. Diarrhea is usually present.

If the infant falls into a condition of malnutrition the most striking evidence of this is loss of weight. The extremities begin to waste, especially the thighs, while the abdomen may remain prominent. The fontanel—the space between the corners of the flat bones of the skull midway between the crown and the forehead—becomes sunken and the skin of the face becomes drawn and loses its pinkish color.

CHAPTER XXIV

THE PREMATURE INFANT

As the nurse receives the premature infant, she should recognize the precariousness of its existence. The functions of its body are to be maintained by external influences instead of by the vitality which normal infants possess. In the first place, premature infants are deficient in fat, which ordinarily in healthy children protects them from external cold. In the second place, they have not the ability to digest food; and, finally, their bodies are unable to generate an amount of heat sufficient to maintain life.

A premature infant, as soon as born, should be carefully wrapped in a layer of absorbent cotton and surrounded by a blanket or receiver. The point of ligation of the cord should be looked at to forestall any oozing, as these infants are more or less likely to bleed. The infant is then surrounded by hot-water bottles and placed before a register.

Should the nurse anticipate premature delivery she should prepare, in advance, several slips made of light flannel and padded with absorbent cotton, the latter being basted on to the flannel to serve as a lining. These slips are cut so as to fold about the infant, including its arms. A simple circular or cape with an opening for the neck will answer. The slip is to be folded about the infant and pinned in place.

Before the child is enveloped in the slip he should be rubbed with equal parts of codliver oil and sweet oil, without being bathed. A fold of absorbent cotton is placed beneath the arms and a

small pad of cotton covered with gauze is placed loosely between the thighs, to serve in place of a diaper. The stump of the cord is protected by a gauze wrap. The slip which envelops the infant may be cut so as to be pinned at the neck and yet serve as a hood to protect the head. This is very important.

In hospital practice the infant is usually placed in an incubator. The principle involved in the

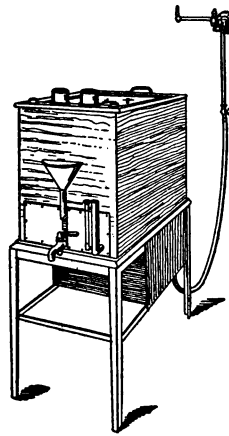

FIG. 61.—Incubator.

incubator is that of keeping the infant in a closed chamber to which warm air, properly moistened, is supplied. Ventilation is provided for by an outlet which forms sufficient draught to replace the foul air. The chamber is shaped like a box, with a glass cover. The infant rests upon a shelf. The air is heated by a gas burner outside of the chamber and is kept moist by the evaporation of water supplied to an underlying tank. The incubator is supplied with a thermometer and a

regulator by which the air is heated to the proper point, usually 85 or 90°.

It is almost unnecessary to emphasize the assertion that a premature infant should be disturbed as little as possible. The napkin or pad should, however, be regularly changed, as the skin is delicate and the genital region is apt to become easily excoriated or chafed. The infant should be freshly rubbed with oil once daily and should be given nourishment at regular intervals.

All these attentions require that the infant should be lifted more or less frequently from the incubator. It is then a question whether or not such infants may be cared for as well in an improvised incubator. Such may be provided by a basket padded with a light mattress or folded blanket covered with a layer of cotton. The basket should be protected by a light blanket thrown over the top, and the infant should be surrounded by heat supplied by bottles or water-bags.

A premature infant is unable to nurse and should, therefore, be fed from a medicine-dropper. If the mother has a supply of milk it should be withdrawn by a breast-pump, the bulb of which has been immersed in hot water to cause the milk to retain its heat. The milk is then transferred to a small cup or glass standing in hot water, and fed by the medicine-dropper. It is most important that the milk should be kept warm. For this purpose the spoon or dropper should be dipped in warm water before using. The infant should receive from 2 to 6 dr. at each feeding. Usually it is necessary to pump both breasts at once in the earlier stage before the milk comes freely.

It may be necessary to supply food to the infant before the milk comes. In this case a very dilute solution of condensed milk or diluted cows' milk may be given (see Chapter XXIII). Small doses of

whiskey, not more than 2 drops at a time, are sometimes prescribed. This should be given from a spoon, in sweetened water, and just before feeding, to avoid disturbing the infant too frequently.

Outside of the acute disorders that are likely to overcome any newly-born infant, the premature infant may lose vitality. The signs of failure are: loss of weight, more or less pronounced jaundice, suppression of urine, edema of the extremities with waxiness of the skin, cyanosis. These signs are likely to be preceded by variations from the normal temperature, either below the normal or an elevation denoting fever; also by loss of appetite and by digestive disturbances—green stools. Convulsive seizures, followed by marked cyanosis, point to an early fatal ending.

The measures which are relied upon to overcome attacks of vital depression, that is, the more or less common attacks in which the infant becomes limp, showing cyanosis and shallow respiration, are: drop doses of aromatic spirits of ammonia in a half teaspoonful of water, whiskey in the same dose or combined with the ammonia, external heat, injections in the bowel of saline solution carried up by a soft catheter and injected slowly, inhalations of oxygen. The nurse who has charge of a premature infant should watch it with great diligence on account of such attacks, and she should have at hand these remedies.

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